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REPORT

OF THE

HEALTH DEPARTMENT

CITY OF RICHMOND

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ANNUAL REPORT

OF THE

HEALTH DEPARTMENT

OF THE

CITY OF RICHMOND, VA.

FOR THE

Year Ending December 31, 1915

RICHMOND:
CLYDE W. SAUNDERS, CITY PRINTER
1916

Health Department, City of Richmond.

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STENOGRAPHER.

MISS R. McLAUGHLIN.

Richmond, Va., April 10, 1916.

Honorable George Ainslie,
Mayor of the City of Richmond.

Sir,—The Board of Health of the City of Richmond submits, as their report for the year ending December 31, 1915, the accompanying reports of the Chief Health Officer and his subordinate officers.

Changes in the Charter of the City of Richmond, adopted at the recent session of the General Assembly of Virginia, and soon to go into effect, will retire the Board of Health and place the Health Department under the Administrative Board.

Very respectfully,
W. T. OPPENHIMER, M. D., President.
JAMES R. GORDON,
R. D. GARCIN, M. D.,
M. D. HOGE, JR., M. D.,
JAMES E. PHILLIPS, JR.

ANNUAL REPORT.

REPORT OF THE CHIEF HEALTH OFFICER.

Richmond, Virginia, February 1, 1916.

To the Honorable Board of Health of the City of Richmond.

Gentlemen,—I have the honor to submit for your consideration the forty-fourth annual report of the Richmond Health Department. This report is in the usual form, consisting of my own report as Chief Health Officer—the tenth, since I have held this office—and of the usual financial and statistical tables and the reports of the other officers of the Health Department. Brief reports from the City Coroner, the Assistant Coroner and the City Chemist, submitted by them, are also included.

In no other of the nine annual reports which I have submitted to you have I been able to show results quite so good as will be set forth in the present report. When, year after year, these reports have shown a steadily decreasing death rate—especially in connection with those diseases in which the results of our work would most clearly appear—I have been fully conscious of the fact that this cannot go on indefinitely. On the one hand, it is recognized that there are widespread conditions, little or not at all understood, which affect the death rate and the prevalence of disease. On the other hand, the death rate from many of our most typical preventable diseases has been so lowered, year after year, that in connection with many of them it is hard to see how further lowering can be brought about.

In spite of these considerations, a number of new records were established in 1915. The general death rate was 18.89 per 1,000, against 19.70 in 1914. This was the fifth consecutive year of decreased general death rate and was the first year on record for Richmond with a death rate under 19. It is too soon to have heard from many other cities as yet, but reports show that in both New Orleans and Washington the general death rate in 1915 was decidedly higher than in 1914.

The death rate from typhoid fever was the lowest ever recorded for Richmond—12.3 per 100,000 inhabitants, against 14.1 in 1914. This was the seventh consecutive year (with the exception of a slight increase in the year 1913) that the death rate from this disease has been lowered. When the typhoid death rate was lowered to 24.1, in 1909, this was considered almost phenomenal for a Southern city, at that time. Yet our 1915 rate was but little over half the 1909 rate, and, to repeat, this has been progressive, each year, with a single exception, being lower than the preceding and than any year previously recorded.

The death rate from infantile diarrhea (under two years of age) was the lowest on record—65.3 per 100,000 inhabitants, against 71.9 in 1914. This was the fourth consecutive year of decreased death rate from this disease, the decrease in every one of these years being most pronounced. This we feel is one of our best accomplishments, since the results have been secured by entirely original work. This work has been based on conclusions entirely new with the Richmond Health Department, and the results, sustained through a period of four years, furnish conclusive evidence of the correctness of these deductions and of the work based on them.

There was no death from measles in 1915. This disease is one which normally flluctuates tremendously from year to year in every community. Hence the fact that it caused no death in Richmond in 1915 has no special significance. Nevertheless it is interesting to note that not since 1904—when the city had but 59 per cent. of its present population—has there been any other year without a death from measles.

There was only one death from malarial fever in 1915, one in 1914, and none in 1913—a total of two deaths from this disease in three years. As both of these decedents were colored, we have not had a white death from malaria in Richmond in the last three years.

There was only one death from scarlet fever. Diphtheria caused only 6 deaths, giving a death rate of 3.9 per 100,000 inhabitants, in spite of a threatened epidemic of this disease in the fall. This rate was slightly higher than in 1914, when there were 4 deaths, giving a rate of 3.0, which was the lowest ever recorded for our city. The average annual death rate from diphtheria for the two years, 1914 and 1915, was thus only 3.4 per 100,000, which is just a bit below the rate for any single year prior to 1914. The real significance of this low rate is best understood when it is stated that the death rate from diphtheria in "registration cities" was 20.4 in 1912 and 22.3 in 1913—the last years for which official figures have been published.

Perhaps the most remarkable of all the figures for 1915 is the greatly reduced death rate under one year of age. There were only 442 deaths in the first year of life, against 509 in 1914. But this does not fairly represent the actual reduction, since the population of the city was only 134,917 in 1914, while in 1915 the population had increased, through annexation and normal increase, to 154,674. Expressed as rates—thereby taking into account both the number of deaths and the population—there were 285 deaths under one year of age in 1915 per 100,000 total population, against 378 in 1914. Yet 1914 had the lowest rate for any year up to that time. The infant mortality rate in 1910 (deaths under one year of age per 100,000 population) was 487 Since then each year, without exception, has had a lower rate than the preceding year. Our 1915 rate of 285 is still quite high in comparison with Northern cities, both on account of our warmer climate and our large percentage of colored population. This will be more fully discussed later on in this report.

Without going further into the discussion of our general death rate and our death rate from special causes in 1915, the following tables are given:

YEAR	NUMBER OF DEATHS			DEATH RATES PER 1,000 INHABITANTS		
	Nonresidents included	Nonresidents only	Nonresidents excluded	Nonresidents included	Nonresidents only	Nonresidents excluded
1907	2,652	155	2,497	23.38	1.37	22.02
1908	2,486	167	2,319	21.66	1.45	20.20
1909	2,404	219	2,185	20.69	1.88	18.81
1910	2,887	331	2,556	22.57	2.59	19.98
1911	2,718	267	2,451	20.95	2.06	18.89
1912	2,715	290	2,425	20.65	2.20	18.45
1913	2,718	297	2,421	20.41	2.23	18.18
1914	2.658	256	2,402	19.70	1.90	17.80
1915	2,922	268	2,654	18.89	1.73	17.16

Table Giving Death Rate from Certain Important Causes, in the City of Richmond, Virginia, for the Year 1911-15, Inclusive.; the Average Annual Death Rate from these Causes for the Four-Year Period, 1907-1910, and the Five-Year Period, 1911-1915, Inclusive, and a Comparison of the Death Rate for These Two Periods.

CAUSE OF DEATH	DEATH RATE PER 100,000							Decrease or Increase in Average Annual Death Rate of 1907-1910 Compared with 1911-1915.
	Annual Average 1907-1910	1911	1912	1913	1914	1915	Annual Average 1911-1915	
Typhoid fever	34.3	17.7	16.7	20.3	14.1	12.3	16.2	18.1
Malarial fever	11.8	.8	2.3	....	.7	.6	.8	11.0
Measles	14.9	9.3	.8	18.8	.7	....	5.9	9.0
Scarlet fever	.4	2.3	.8	3.8	1.5	.6	1.8	1.4*
Whooping cough	19.8	39.3	3.8	12.8	45.2	6.5	21.5	1.7*
Diphtheria	8.9	10.0	6.1	6.0	3.0	3.9	5.8	3.1
Dysentery	16.2	20.0	14.4	15.8	8.2	8.4	13.4	2.8
Influenza	28.3	24.7	19.0	22.5	18.5	23.3	21.6	6.7
Pneumonia (lobar or unqualified)	137.7	88.6	86.0	76.6	90.4	121.5	92.6	45.1
Bronchopneumonia	58.2	64.0	79.1	70.6	90.4	69.8	74.8	16.6*
All diseases of the respiratory system (consumption not included)	307.3	225.1	243.4	231.3	244.6	253.4	239.6	67.7
Consumption	213.9	206.6	205.4	160.7	183.1	170.0	185.2	28.7
Other tuberculous diseases	36.8	42.4	38.8	45.0	36.3	42.7	41.0	4.2*
Cancer (of all organs)	77.0	87.1	91.3	86.3	92.6	80.2	87.5	10.5*
Apoplexy	139.3	147.2	151.4	139.6	126.7	130.0	139.0	.3
Organic heart disease	163.2	167.3	216.8	209.5	192.7	200.4	197.3	34.1*
Bright's disease	141.7	161.1	168.1	165.9	146.8	165.5	161.5	19.8*
Diarrhea (under 2 years)	130.6	151.1	100.4	84.1	71.9	65.3	94.6	36.0
Diarrhea (over 2 years)	35.2	30.1	25.1	30.8	20.0	21.3	25.5	9.7
Congenital debility	113.8	97.9	117.9	120.1	114.1	104.1	110.8	3.0
Suicide	10.4	20.0	13.7	19.5	10.4	12.3	15.2	4.8*
Legal electrocution	†7.0	2.3	5.3	10.5	6.7	7.1	6.4	.6
Other violent deaths (nonsuicidal)	106.3	113.3	123.2	113.4	138.6	110.6	119.8	13.5*
Cause of death ill defined or unknown	80.0	43.9	32.0	23.3	33.4	29.7	32.5	47.5
Total deaths, all causes:								
Nonresidents included	2,208	2,095	2,065	2,041	1,970	1,889	2,012	196
Nonresidents excluded	2,025	1,889	1,845	1,818	1,780	1,716	1,810	215

***Increase**

†The first legal electrocution under the Act of 1908 (by which all electrocutions, for crimes in any part of the State, are conducted in Richmond) was in October, 1908.

All death rates in the above table are calculated from the official census of 1910 and the postcensal estimates of the United States Bureau of the Census for intercensal years.

The accompanying table giving the death rate from certain causes is especially interesting. A number of the most important points which it brings out have already been discussed. The most important of all these points is the great decrease in the death rate from contagious diseases—including infantile diarrhea—and the increase in the death rate from a considerable proportion of the noncontagious, nonpreventable diseases. The death rate from heart disease, Bright's disease and cancer have all increased, as has the death rate from suicide and other violence. Yet the decrease in the death rate from the preventable diseases has been sufficient not only to offset this but to give us a decided net gain.

One very important point should be brought out. The death rate from pneumonia (lobar or unqualified) has decreased while the death rate from broncho-pneumonia has increased. This is probably due almost entirely to the following facts. In the International List of Causes of Deaths, which is followed by practically all health officers and registrars of vital statistics, pneumonia is divided into two classes—"Pneumonia, lobar or unqualified," and "broncho-pneumonia." It was formerly our custom to classify under the former head (Title 92) all deaths for which "pneumonia," without any statement as to which kind, was given as the cause of death. More recently we have not followed this custom but have asked for further information from the attending physician. Many of these have turned out to be broncho-pneumonia. In this way many deaths which would formerly been assigned to title 92 have been classified under broncho-pneumonia, thus increasing the apparent number of deaths from this cause and decreasing the number from pneumonia, lobar or unqualified.

POPULATION

On November 5, 1914, the City of Richmond more than doubled its area by adding about thirteen square miles of new territory to its previous eleven square miles. The population of the annexed territory was approximately 18,000.

The midyear population of Richmond for 1914, as estimated by the United States Bureau of the Census, was 134,917, of which 85,498 were whites and 49,419 were colored. The 1915 population, as estimated by the Census Bureau, was 154,674, of which 98,018 were whites and 56,656 were colored. The increase in population between 1914 and 1915 was therefore 19,757, the white increase being 12,520 and the colored 7,237.

Annexation made no essential alteration in the relative proportion of white and colored population, which remained 63.4 per cent. white and 36.6 per cent. colored.

By agreement with the United States Bureau of the Census and the State Registrar of Vital Statistics, all tables for the year 1914 were calculated on the basis of population before annexation, and, of course, no births or deaths in this annexed area were included. To have done otherwise would have resulted in confusion. A separate table was given covering deaths in the annexed territory from the date of annexation, November 5th, to the end of the year.

The present report, for the year 1915, is therefore the first annual report which takes into account this larger population. This is to be borne in mind in connection with all death rates in tables covering 1915 and previous years. For example, there were 4 deaths from diphtheria in 1914, giving a death rate of 3.0 per 100,000 inhabitants, while in 1915 there were 6 deaths from this disease, giving a death rate of 3.9 per 100,000 inhabitants. It would be natural to regard these figures as erroneous unless the increased population were considered, since, owing to this increase in population, fifty per cent. more deaths from diphtheria increased the rate only 30 per cent.

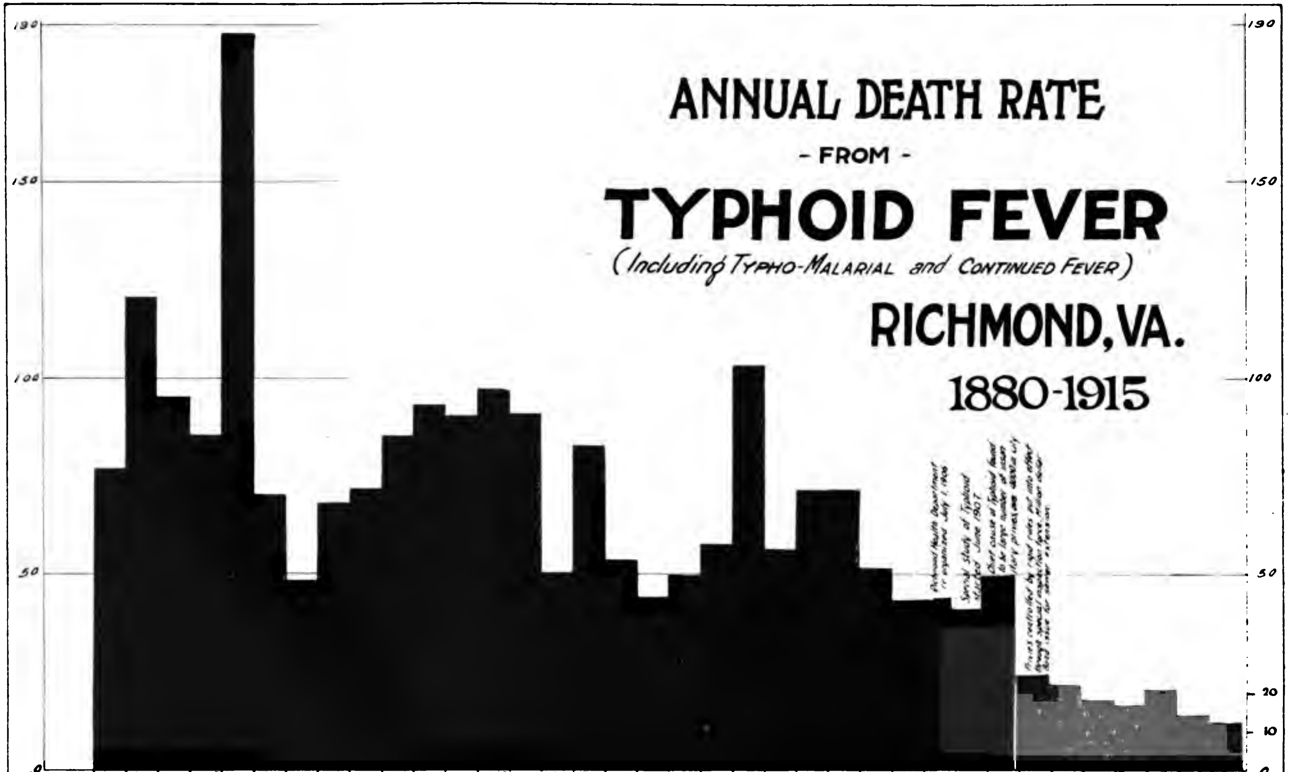
PROBLEMS OF ANNEXED TERRITORY.

In view of the doubling of our territory by annexation and adding thereby about 18,000 to our population, the Board of Health asked the City Council for six additional sanitary officers. Only two were given. In other directions as well the request of the Board for the means for looking out for the increased territory and population were either ignored or scaled down. In consequence of this we have not been able to do what we would have liked. In some instances, such as in connection with medical inspection of school children for the detection and exclusion of contagious diseases, we have been unable to do anything. In other matters, such as sanitary inspections, we have done the best we could to cover the entire city. It is self-evident, however, that such service could not be satisfactory, either to the old city or to the new parts, since we have had to curtail the work done in the old city in order to get into the new territory, but this has not enabled us to do thorough work in the new territory.

TYPHOID FEVER.

While 19 deaths from typhoid fever, equivalent to a death rate of 12.3 per 100,000 inhabitants, the year 1915 tied with 1914 in having the smallest number of deaths from this disease for any year on record, while the death rate per 100,000 was decidedly the lowest, without any exception. The year was remarkable in not having a single death from typhoid fever during the first six months. Prior to reorganization in 1906, single months without a typhoid death were few, in spite of the smaller population. To have gone half the year with no death establishes another new record.

The following table gives the number of deaths from typhoid fever in Richmond for each year since 1880, a period of thirty-six years, and the annual death rate per 100,000 inhabitants:



ANNUAL DEATH RATE
- FROM -
TYPHOID FEVER
(Including Typho-Malarial and Continued Fever)
RICHMOND, VA.
1880-1915

YEAR	1880	1881	1882	1883	1884	1885	1886	1887	1888	1889	1890	1891	1892	1893	1894	1895	1896	1897
No. of Deaths	49	79	64	59	133	51	36	52	56	68	76	74	80	75	42	69	45	37
Rate per 100,000	77.0	120.9	95.4	83.6	188.1	70.1	48.5	68.4	72.8	83.4	93.4	90.6	97.4	91.0	50.7	82.9	53.8	44.1

YEAR	1898	1899	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915
No. of Deaths	42	49	88	49	63	64	47	40	41	47	57	28	28	23	22	27	19	19
Rate per 100,000	49.9	57.9	103.3	56.6	71.6	71.7	51.8	43.5	43.9	41.4	49.7	24.1	21.9	17.3	16.3	20.3	14.1	12.3

Table Showing Annual Number of Deaths from Typhoid Fever (Including "Typho-Malarial Fever" and "Continued Fever") and the Annual Death-Rate per 100,000, *Richmond, Virginia,* 1880-1915.

YEAR	DEATHS FROM TYPHOID FEVER		YEAR	DEATHS FROM TYPHOID FEVER	
	Number of Deaths	Rate per 100 000		Number of Deaths	Rate per 100.000
1880	49	77.0	1900	88	103.3
1881	79	120.9	1901	49	56.6
1882	64	95.4	1902	63	71.6
1883	59	85.6	1903	64	71.7
1884	133	188.1	1904	47	51.8
1885	51	70 4	1905	40	43 5
1886	36	48.5	1906	41	43.9
1887	52	68.4	1907	47	41.4
1888	56	72.0	1908	57	49.7
1889	68	85.4	1909	28	24.1
1890	76	93.4	1910	28	21 9
1891	74	90.6	1911	23	17.7
1892	80	97.4	1912	22	16.7
1893	75	91.0	1913	27	20.3
1894	42	50.7	1914	19	14.1
1895	69	82.9	1915	19	12 3
1896	45	53.8			
1897	37	44.1			
1898	42	49.9			
1899	49	57.9			

The annual number of deaths from typhoid fever and the annual death rate per 100,000 inhabitants are combined in the following table giving the average annual number of deaths and death rate in five-year periods.

PERIOD	AVERAGE ANNUAL MORTALITY FROM TYPHOID FEVER	
	Number of Deaths	Rate Per 100,000
1880-1884 (5 years)	76.8	113.4
1885-1889 (5 years)	52.6	68.9
1890-1894 (5 years)	69.4	84.6
1895-1899 (5 years)	48.4	57.7
1900-1904 (5 years)	62 2	71.0
1905-1909 (5 years)	42.6	40 5
1910-1914 (5 years)	23.8	18.1
1911-1915 (last 5 years)	22.0	16.2
1915	19.0	12.3

The rates given in the first of the above tables are shown graphically in the accompanying diagram.

Table Giving a Brief History of the Nineteen (19) *Deaths from Typhoid Fever in the City of Richmond During* 1915, *With Special Reference to* (1) *Where Disease was Contracted,* (2) *Whether Resident or Nonresident of Richmond, and* (3) *Whether Diagnosis was Positive or Doubtful.*

CASES CONTRACTED IN CITY.

1. *(Resident) 28-1652, colored female, 19 yrs., died July 12. Not considered typhoid until after death. Ill 9 days. Widal and blood culture negative on 10th. Signed, "Suspected Typhoid." Fatal outcome was only reason for diagnosis.*
2. *(Resident) 29-1733, colored male, 15 yrs., died July 22. Ill 8 days. Widal and blood culture negative on 21st. Diagnosis of typhoid suggested by consultant day before death. Very slim chance of this case being typhoid.*
3. (Resident) 34-1769, colored male, 37 yrs., died July 28. Ill 9 days. Blood culture positive.
5. *(Resident) 43-1788, colored male, 50 yrs., died July 31. Ill since February, with all symptoms of pulmonary tuberculosis. Widal and blood culture negative. No reason for diagnosis of typhoid except high temperature during last days. Signed, "Probably typhoid fever."*
6. (Nonresident) 46-1848, colored male, 23 yrs., died August 9. Ill 12 days. Widal negative; blood culture positive.
7. (Resident) 53-1961, white female, 17 yrs., died August 26. Ill 15 days. Widal atyp.; blood culture positive.
8. (Resident) 59-1982, colored female, 39 yrs., died August 26. Ill 13 days. Widal and blood culture positive.
11. (Resident) 52-2062, white male, 11 yrs., died Septemer 10. Ill 32 days. Intestinal perforation. Widal negative; blood culture positive.
12. *(Resident) 93-2063, white male, 38 yrs., died September 10. Ill 8 days, starting with chill and pain in chest. Cough several months, with loss of weight. Widal negative. Signed, "Probably typhoid." Diagnosis exceedingly doubtful.*
14. (Resident) 98-2229, white male, 25 yrs., died October 4. Ill 1 month. Widal and blood culture positive.
15. (Resident) 133-2253, colored male 22 yrs., died October 7. In bed 4 days. Not diagnosed until after death, which was due to intestinal hemorrhage.
16. (Resident) 122-2333, white male, 18 yrs., died October 16. Ill 12 days. Complicated by lobar pneumonia.
18. (Resident) 148-2430, colored male, 28 yrs., died October 28. In bed 6 days. Intestinal perforation and hemorrhage.

CASES CONTRACTED OUT OF CITY.

4. (Nonresident) 35-1780, colored male, 23 yrs., died July 31. Case brought from City Point. Widal and blood culture positive.
9. (Nonresident) 94-2059, white male, 35 yrs., died September 10. Ill 21 days. Brought from Ellerson. Widal and blood culture positive.
10. (Nonresident) 83-2061, white male, 58 yrs., died Septemer 10. Ill 37 days. Brought from Lunenburg; died 6 hours after arrival.
13. *(Resident) 117-2195, white male, 34 yrs., died September 28. Ill 7 days. Out of town 2 or 3 months when taken ill. Signed, "Probably typhoid." Diagnosis very doubtful.*
17. (Resident) 136-2387, colored female, 15 yrs., died October 23. Ill 7 days. In Washington September 16 to October 13. Took to bed 3 days after return. Widal positive.
19. (Resident) 158-2831, colored male, 21 yrs., died December 21. Fireman on boat between Richmond and City Point. Lived entirely on boat. Blood examination at hospital showed malarial plasmodium. Diagnosis malaria and acute gastritis. Acute symptoms led to operation; perforated appendix found. Death certificate returned giving malaria and appendicitis as cause of death. Blood specimens collected on day of death and examined next day in Department laboratory gave atyp. Widal and positive culture for typhoid. On these findings, attending physician was asked for new certificate, giving typhoid fever as cause of death.

(Explanatory Note). The first figure preceding each case in the above table is the consecutive number of each of the 19 fatal cases of typhoid fever in Richmond during 1915, according to the date of death. The first part of the second (hyphenated) figure refers to the serial number of each case in the records which the Richmond Health Department keeps of all cases of typhoid fever in the city, while the second part of this figure is the registered number of the certificate of death in each case. These latter figures are given for our own use only, enabling us to refer immediately to the full records of these cases and to the certificates of death, if it is desired to make further studies of these cases at any time. Cases printed in italics are those in which the diagnosis of typhoid fever was more or less doubtful. Words in quotation are taken from statements made by the attending physician on the death certificate. Decedents who had been in Richmond six months or less are classified as nonresidents.

Table Giving Summary or Typhoid Deaths in Richmond During 1915, *Classified According to* (1) *Where Disease was Contracted,* (2) *Whether Resident or Nonresident of Richmond, and* (3) *Whether Diagnosis was Positive or Doubtful.*

	CONTRACTED IN RICHMOND			CONTRACTED OUT OF RICHMOND			ALL CASES		
	Resident	Non-Resident	Total	Resident	Non-Resident	Total	Resident	Non-Resident	Total
Diagnosis positive.....	8	1	9	2	3	5	10	4	14
Diagnosis doubtful....	4	0	4	1	0	1	5	0	5
All cases................	12	1	13	3	3	6	15	4	19

The 19 deaths attributed to typhoid fever in Richmond during 1915 include every death assigned to this cause on the death certificate. But the above tables show that 6 of these decedents (3 residents and 3 nonresidents) contracted the disease out of Richmond and that the diagnosis was doubtful in 4 of the 13 decedents who contracted the disease in Richmond. The following summary of the number of deaths and the death rate from typhoid is of interest.

	Number of Deaths	Death Rate per 100,000
All deaths from typhoid fever in Richmond, 1915.............	19	12.3
Excluding nonresidents who contracted the disease outside of Richmond	16	10.3
Excluding all cases contracted outside of Richmond........	13	8.4
Excluding all cases contracted outside of Richmond and all cases contracted in Richmond in which the diagnosis was doubtful..	9	5.8

This last method of statement shows that, including all deaths, our typhoid fever death rate in 1915 was 12.3, the lowest on record for our city; that if deaths among nonresidents who contracted the disease elsewhere are excluded the rate was 10.3; that if deaths among both residents and nonresidents who contracted the disease elsewhere are excluded, the rate was 8.4, and that if only those deaths are counted in which the disease was contracted in Richmond and in which, moreover, there was no doubt as to the diagnosis, the death rate from typhoid fever in Richmond was 5.8 per 100,000.

LOWEST TYPHOID YEAR ON RECORD.

As stated in several places above, the typhoid fever death rate in Richmond during 1915 was the lowest ever recorded for our city—12.3 deaths per 100,000 inhabitants. It is interesting to note, however, that we now have a record for a consecutive twelve-months period (July 1, 1914 to June 30, 1915), with a rate of only 8.3 per 100,000. Of the 19 typhoid deaths in 1914, 12 occurred after July 1. During the first six months of 1915 there was not a death from typhoid fever in Richmond. There were thus only 12 deaths from typhoid fever in Richmond from July 1, 1914, to June 30, 1915, giving, as just stated, a rate of 8.3 deaths per 100,000 inhabitants for this twelve-month period.

HOW THE TYPHOID DEATH RATE WAS LOWERED.

To have added another year of unprecedently low death rate from typhoid fever in Richmond gives additional proof, if more were needed, of the soundness of the policies inaugurated late in 1908 for the control of this disease. What these policies are has been repeatedly stated in my annual reports, and for details these reports may be consulted. I wish only to emphasize the fact that we have found the spread from local foci of infection—cases and "carriers"—in our boundaries to be the greatest factor to be considered.

Without repeating the details, we believe that complete reporting of all cases by the attending physician and the following up of all these cases by the Medical Inspector (who gives full instructions, both written and verbal, for disposal of the bowel discharges and other measures of prevention) to be of the greatest value in checking spread from known cases of typhoid fever. Spread by carriers can be minimized by general measures, applying to the entire community. Sewer extensions, with the doing away of privies; the enforcement of rigid requirements for such privies as cannot be abolished because of lack of sewer facilities, and the various measures for limiting the prevalence of flies are all of the utmost importance. Further details, to repeat, are given in other annual reports.

TYPHOID VACCINATION.

For reasons which I have gone into pretty fully in other reports, the Richmond Health Department does not regard it as feasible to undertake general anti-typhoid vaccination of all the people in Richmond. The cost would be prohibitive and at best only a small proportion of the people would be reached. Of the 155 cases of typhoid fever reported during 1915, only 110 were contracted in Richmond. To have reached these 110 individuals would have meant vaccination of our entire population of 154,674 persons, or approximately, 1,400 vaccinations for each case prevented thereby.

On the other hand, 3 of our 19 deaths from typhoid fever in 1915, as shown in one of the above tables, were residents of Richmond who contracted the disease elsewhere. The risk of anyone's contracting typhoid fever in Richmond is now so small that we do not urge anti-typhoid vaccination for our people who remain in town. But the risks of travelling are much heavier. And, since a very considerable proportion of our people—quite a large proportion of the class which gives serious consideration to health matters—may be counted on to be out of the city at least once during the year, it is highly desirable for everyone to protect himself by vaccination against typhoid fever. The three injections which are used are given at intervals of a week or ten days, thus making it at least two weeks before he gets the three injections. Obviously, then, there is not time for anyone to protect himself in this way as a precaution against the risks of travelling unless he knows at least two weeks in advance that he is going away.

In view of all these considerations, it is certainly wise for every individual to take this simple prophylactic precaution. It is not expensive and usually causes very slight discomfort. The Department carries a stock of anti-typhoid vaccine. The entire outfit, of three syringe doses, costs only sixty cents.

TYPHOID DIAGNOSIS.

In the report of the Medical Inspector mention is made of the amount of work done by himself and the City Bacteriologist in connection with diagnosis of suspected typhoid fever. In the past two years this has been a very important feature of our work. Rarely does the Widal test prove of very great value. On the other hand, blood cultures are far more reliable. In 1915 blood cultures were made and examined from 219 suspected cases, and 145 of these were taken by the Medical Inspector or under his supervision. Widals and examinations for the malarial parasite were also done in all these cases, and frequently a differential count was also made, especially where some septic condition was considered likely.

This work resulted in our finding that three of the suspicious cases were actually tuberculosis, two were malarial fever and, especially important, two fatal cases were proved to be septic fever. In consequence of this work and of other methods of the Medical Inspector, we had only 5 deaths attributed to typhoid fever in which we were either very doubtful or actually convinced that the disease was not typhoid. In previous years—with the exception of 1914—the number of such cases has been much larger.

On the other hand, we are even more solicitous that no death really due to typhoid fever shall be attributed to any other cause.

What we want is accurate statistics. For example, in the last death in the year which was due to typhoid fever the death certificate was actually filed in our office with the cause of death given as malarial fever and perforating appendicitis. There was no question whateoever as to the perforation of the appendix, as this was found by operation. Two blood examinations made by the hospital interne were reported as showing malarial parasites. But Dr. Summers, our Medical Inspector, had taken a blood culture a short while before the patient died. Examination of this culture on the following day by Dr. Graves, our Bacteriologist, showed typhoid bacilli.

The patient being then dead and the death certificate already turned in, the matter might have been allowed to rest there. But we requested a consultation with the attending physician, laid the above facts before him and had him make out a new death certificate with typhoid fever as the cause of death.

COLORED TYPHOID NEXT POINT OF ATTACK.

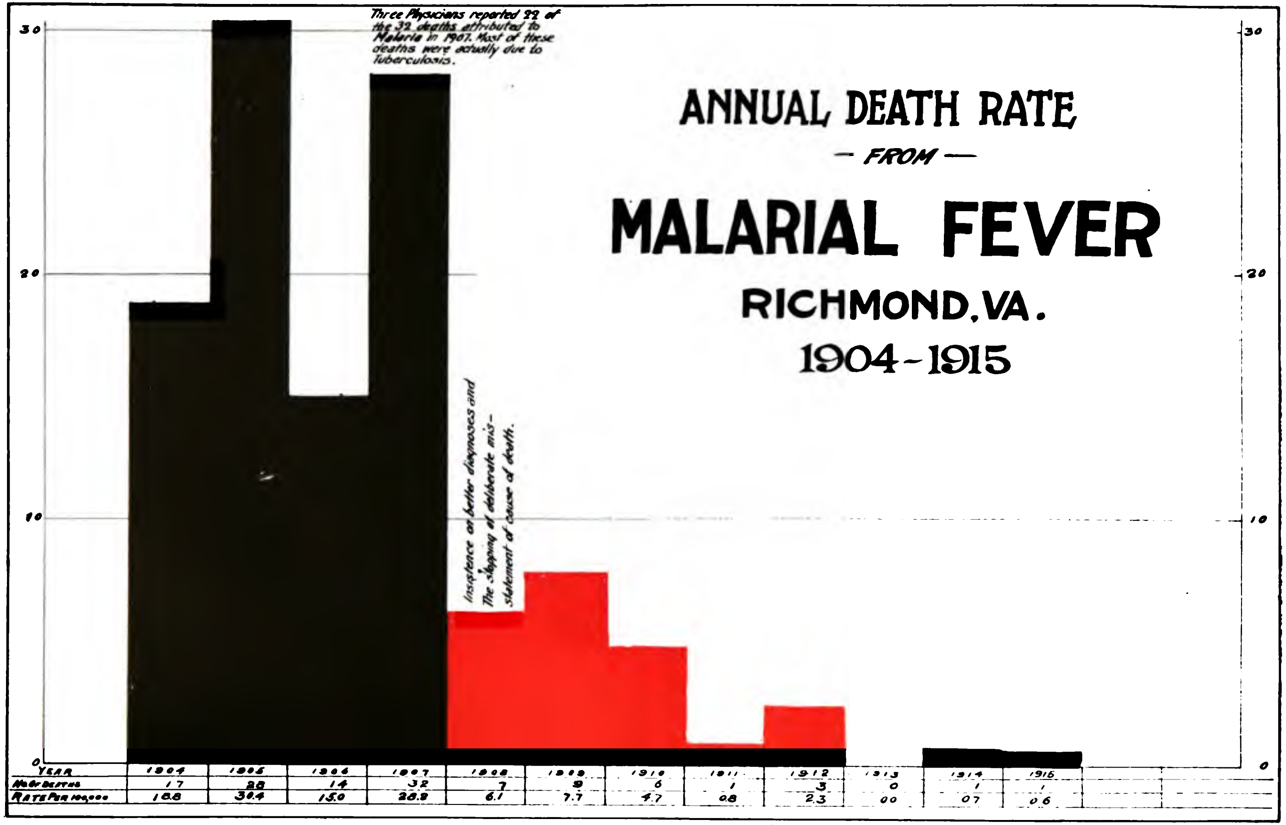
It is exceedingly interesting to note certain points in connection with the comparative death rate from typhoid fever amog the white and colored races in Richmond. As shown in preceding tables and in the typhoid diagram, the great drop in the death rate from typhoid fever in Richmond was in 1909, when the rate fell to 24.1 per 100,000. The white rate that year was 24.9 and the colored was 22.8. Since then the typhoid death rate has steadily dropped, with the single exception of 1913, until last year it reached the low level of 12.3.

In 1911, 1912 and 1913 the colored rate was lower than the white. But in 1914, with a total rate of 14.1, the white rate was only 9.4 while the colored rate was 22.2. In 1915, with a total rate of 12.3, the white rate was 6.1 and the colored was 22.9. If we confine ourselves to deaths from typhoid fever contracted outside of Richmond, the white rate in 1915 reached the phenomenally low figure of 3.1, while the colored rate was 17.7.

It is thus seen that the steady lowering of the death rate from typhoid fever in Richmond has apparently been brought about almost entirely by lowering the white death rate from this disease. Thus, in 1909 the total rate was 24.1 while in 1915 it was 12.3, a little over half. But the colored rate in these two years was 22.8 and 22.2, respectively. In other words, it was almost exactly the same in 1915 as in 1909.

Now, I am convinced that the measures which have so greatly lowered our general death rate from typhoid fever have beyond question done at least as much in preventing typhoid fever among the colored people as they have done for the white people. The inevitable conclusion is that in former years a considerable number of deaths from typhoid fever in the colored race in Richmond have been assigned to other causes and that the colored death rate in those years was higher than the white rate.

While I am convinced of the truth of this deduction, it does not have to be accepted in order for the fact itself to remain that in 1914



ANNUAL DEATH RATE

— FROM —

MALARIAL FEVER

RICHMOND, VA.

1904-1915

Three Physicians reported 22 of the 32 deaths attributed to Malaria in 1907. Most of these deaths were actually due to Tuberculosis.

Insistence on better diagnoses and The stopping of deliberate mis-statement of cause of death.

YEAR	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915
No. of Deaths	17	28	14	32	7	9	6	1	3	0	1	1
Rate Per 100,000	18.8	30.4	15.0	28.8	6.1	7.7	4.7	0.8	2.3	00	07	06

and in 1915 the colored death rate from typhoid fever was apparently much higher than in 1911 and 1912, although the white rate was only one-third as high.

As a practical point, it is very clear that further lowering of our typhoid fever death rate must be brought about by giving increased attention to the colored race. Along with this, of course, we must not relax in the least our efforts to hold the white rate down to its recent low level.

MALARIAL FEVER.

There was only one death from malarial fever in Richmond during 1915, equivalent to a death rate of 0.6 per 100,000 inhabitants. This is the lowest death rate on record from this disease in Richmond, with the single exception of the year 1913, during which not a single death was attributed to malaria. In 1914 there was 1 death, but the large increase in population between 1914 and 1915, due to annexation of new territory, made the 1914 rate 0.7 against the rate of 0.6 for 1915.

It is of interest to note that the single death from malaria in each of the last two years—1914 and 1915—was colored, so, with no death in 1913, there has not been a white death in Richmond from malarial fever in the past three years.

The following table gives the annual number of deaths and the annual death rate per 100,000 inhabitants from malarial fever in Richmond for the past twelve years:

YEAR	DEATHS FROM MALARIAL FEVER	
	No. of Deaths	Death Rate per 100 000
1904	17	18.8
1905	28	30.4
1906	14	15.0
1907	32	28.2
1908	7	6.1
1909	9	7.7
1910	6	4.7
1911	1	0.8
1912	3	2.3
1913	0	0.0
1914	1	0.7
1915	1	0.6
Annual average 1904–07	22.8	23.1
Annual average 1908–10	7.3	6.2
Annual average 1911–15	1.2	0.9

The rates given in the above table are shown graphically in the accompanying diagram.

The table and diagram show that malarial fever as a cause of death in Richmond has been practically eliminated. I have in each of my annual reports since 1908, inclusive, stated rather fully the significance of all this. To repeat, very briefly, the large number of deaths formerly attributed to malarial fever in Richmond were not actually due to that disease. A large proportion of the deaths were due to tuberculosis. Some of these were not correctly diagnosed, but most of them were assigned to malaria by the attending physician because of small insurance policies held by the decedents, and these, under the terms of these policies at that time, were not paid, or were paid only in part, if the insured died of tuberculosis.

In other instances there was not deliberate falsification of death certificates but slipshod work on the part of the attending physicians, who found malaria a convenient term to use when the cause of death in cases with more or less rise of temperature was not recognized. As soon as this was found out—early in 1908—steps were taken to secure correct and honest returns. The effect in the first three years following this (1908, 1909 and 1910) was to reduce the apparent death rate from an annual average of 23.1 per 100,000 inhabitants to an annual average of 6.2, and in the last of these three years (1910) the rate was reduced to 4.7 per 100,000, the actual number of deaths in that year being 6.

In the last five years (1911-1915, inclusive) a still further reduction was made. In these five years there have been only 6 deaths altogether, an average annual number of 1.2 deaths and an average rate of 0.9 per 100,000 inhabitants, while in the past three years there have been altogether only 2 deaths—both colored—an annual average of 0.7 deaths, equivalent to average annual death rate of 0.4 per 100,000 inhabitants.

I think it proper to repeat briefly what I have previously stated as to the actual advertising value of this to the city. Business men and heads of families very commonly in these days inquire into the healthfulness of communities to which they are contemplating bringing their enterprises or their families. In coming to the South the question of "fever" is usually looked into. Richmond with its old malarial death rate of 23.1 per 100,000 inhabitants might well deter anyone from coming here to live or to establish any business. Our recent rate of less than 1 per 100,000—less than one-half of 1 per 100,000 for the past three years—is bound to make an excellent impression.

As indicated above, the phenomenally low death rate from malarial fever in Richmond in recent years is due, chiefly, to the getting of correct statements as to the cause of death, since fatal malaria is seldom, if ever, contracted in Richmond. On the other hand, there can be no doubt but that the number of cases of malaria of a non-fatal type has been distinctly lowered in Richmond by the work which has been done by the Health Department and the Engineer's Department.

DIPHTHERIA.

The history of diphtheria for the year 1915 is interesting. There were 312 cases of this disease reported, with 6 deaths, against 208 cases, with 4 deaths, in 1914. The case fatality was therefore exactly the same in these two years--slightly under two per cent.. This is, in itself, a remarkable showing, especially when it is recalled that 38 of the cases were straight laryngeal cases and in 12 others the larynx was involved along with other locations, or 50 cases altogether with involvement of the larynx. Of these laryngeal cases, 14 were sufficiently severe to require intubation, and of these only 2 died.

At this point I wish to state the record of the Richmond Health Department in connection with severe laryngeal diphtheria during the past nine years. As shown in the report of our consultant in diphtheria, Dr. Lipscomb, he has intubated exactly 100 cases for the Department in that time. Of these, 86 recovered and 14 died, an even 14 per cent. fatality. When it is remembered that these cases were attended in their homes, and that, for the most part, these cases were in the worst class of homes in the city, the results are extraordinary. I do not know what the latest figures are in other places or in hospitals especially devoted to the treatment of diphtheria. I am of the opinion, however, that a case fatality of about 20 per cent. in laryngeal cases is looked upon as general. Our own record is due to the conscientious work of the men who have held the position of Medical Inspector and to the skill and judgment of Dr. Lipscomb.

Returning to the mortality from all forms of diphtheria during 1915, there were, as stated above, 6 deaths from this disease. This is equivalent to a death rate of 3.9 per 100,000 inhabitants. As the death rate for 1914 was 3.0 per 100,000, we had in 1914 and 1915 the lowest death rate from diphtheria for any two consecutive years in the history of the city.

The following table gives the number of deaths and the death rate per 100,000 inhabitants from diphtheria for each year since 1875—a total period of forty-one years.

Table Showing the Annual Number of Deaths from Diphtheria (Including Croup), and the Annual Death Rate per 100,000 *in the City of Richmond, Virginia, from* 1875 *to* 1915.

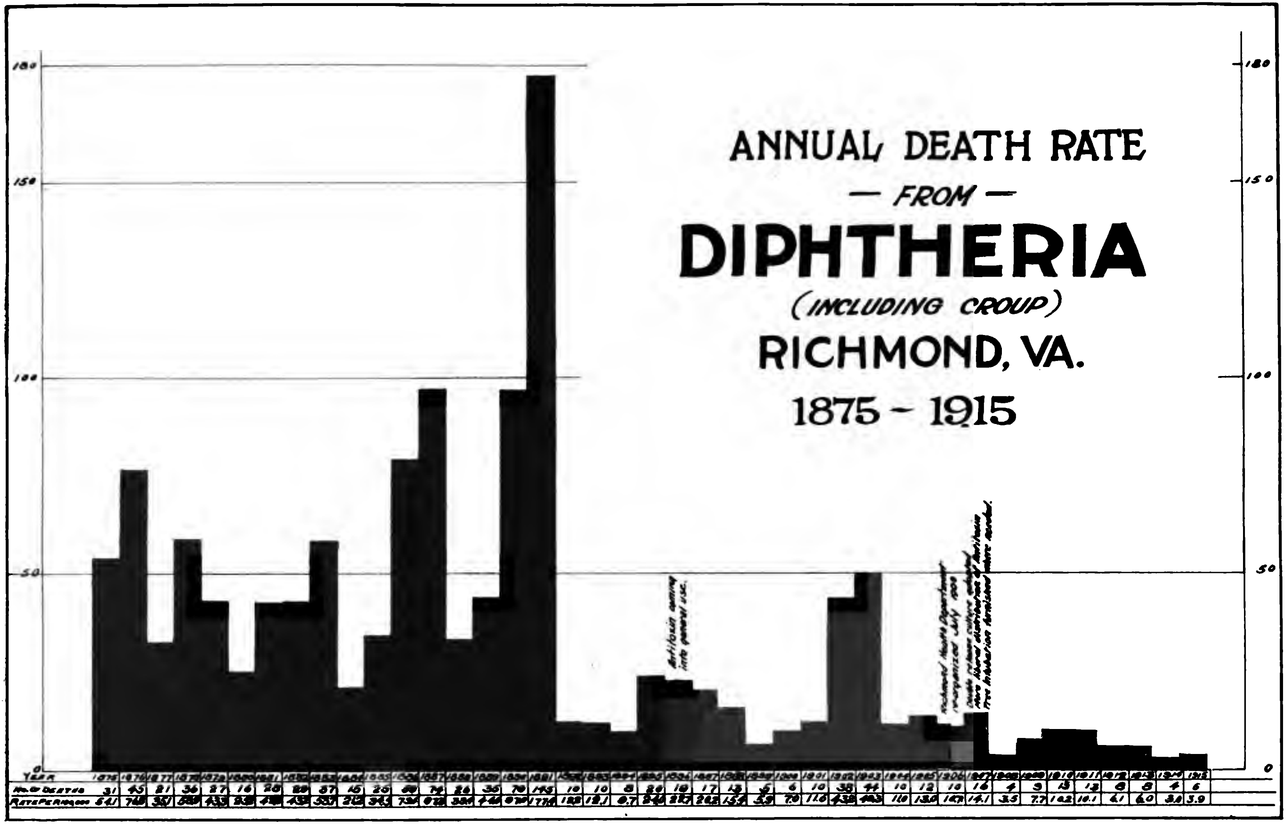
YEAR	DEATHS FROM DIPHTHERIA		YEAR	DEATHS FROM DIPHTHERIA	
	Number of Deaths	Death Rate per 100,000		Number of Deaths	Death Rate per 100,000
1875	31	54.1	1895	20	24.0
1876	45	76.8	1896	19	22.7
1877	21	35.1	1897	17	20.2
1878	36	58.9	1898	13	15.4
1879	27	43.3	1899	5	5.9
1880	16	25.2	1900	6	7.0
1881	28	42.8	1901	10	11.6
1882	29	43.2	1902	38	43.2
1883	37	53.7	1903	44	49.3
1884	15	21.2	1904	10	11.0
1885	25	34.5	1905	12	13.0
1886	59	79.4	1906	10	10.7
1887	74	97.3	1907	16	14.1
1888	26	33.4	1908	4	3.5
1889	35	44.0	1909	9	7.7
1890	79	97.0	1910	13	10.2
1891	145	177.4	1911	13	10.1
1892	10	12.2	1912	8	6.1
1893	10	12.1	1913	8	6.0
1894	8	9.7	1914	4	3.0
			1915	6	3.9

In the following table the number of deaths from diphtheria and the death rate per 100,000 inhaitants are given by five-year periods.

PERIOD	AVERAGE MORTALITY FROM DIPHTHERIA	
	Number of Deaths	Death Rate per 100,000
1875-1879 (5 years)	32.0	53.6
1880-1884 (5 years)	25.0	37.2
1885-1889 (5 years)	43.8	57.7
1890-1894 (5 years)	50.4	61.7
1895-1899 (5 years)	14.8	17.6
1900-1904 (5 years)	21.6	24.4
1905-1909 (5 years)	10.2	9.8
1910-1914 (5 years)	9.2	7.1
1911-1915 (last 5 years)	7.8	5.8
1915	6.0	3.9

SKIN DIPHTHERIA.

Of more interest than any other phase of the diphtheria situation during 1915 was certain work and observations made in connection with skin diphtheria. In September our Medical Inspector, Dr. Summers, stated to me that he had noticed that a very large proportion of all reported cases of diphtheria, including some severe laryngeal cases, showed the presence of peculiar skin sores and that the history in these cases was that the skin lesions had in every instance been present


ANNUAL DEATH RATE
— FROM —
DIPHTHERIA
(INCLUDING CROUP)
RICHMOND, VA.
1875 - 1915
180
150
100
50
0
Antitoxin coming into general use.
Richmond Health Department reorganized July 1906
Double release culture adopted
More liberal distribution of Antitoxin
Free Intubation furnished where needed.
YEAR 1875 1876 1877 1878 1879 1880 1881 1882 1883 1884 1885 1886 1887 1888 1889 1890 1891 1892 1893 1894 1895 1896 1897 1898 1899 1900 1901 1902 1903 1904 1905 1906 1907 1908 1909 1910 1911 1912 1913 1914 1915
No. of DEATHS 31 45 21 36 27 16 26 [illegible] 37 15 25 [illegible] 74 26 35 70 145 10 10 8 26 19 17 13 5 6 10 38 44 10 12 10 16 4 9 13 13 8 8 4 6
RATE PER 100,000 54.1 [illegible] 35.1 [illegible] 43.3 [illegible] [illegible] 43.[illegible] 55.7 21.2 34.5 [illegible] [illegible] 35.[illegible] [illegible] [illegible] 177.6 12.3 12.1 8.7 [illegible] [illegible] 20.2 15.4 5.9 7.0 11.6 [illegible] [illegible] 11.0 13.0 [illegible] 14.1 3.5 7.7 10.2 10.1 6.1 6.0 3.0 3.9

MU

for some time before diphtheria of the mucous membranes developed. He had taken cultures from the skin lesions in these cases and the laboratory report in every instance showed in these skin cultures the same organism which was present in the throat.

At this point we began to study the situation together. The facts above stated naturally suggested that if these cases had been seen when only the skin lesions were present the attack of true diphtheria, in the usual sense, might have been headed off. The next point which naturally suggested itself was that perhaps we might be able to locate children with these skin lesions but with no other manifestations of diphtheria.

Once started along this line of inquiry, we found that such cases were very numerous indeed throughout the city. We found them without difficulty by neighborhood canvass and by inspections in the public schools. In all, 692 cases of skin lesions were "cultured," and 160 were positive for the Klebs-Loeffler bacillus. This was on a single examination in each instance. Moreover, in this connection only the absolutely typical organisms were put down as positive.

I will not here go into a full discussion of the significance of the above facts. They are, I believe, of very great importance. Every health officer has long realized that only a very small part of our diphtheria can be traced to previous recognized cases. We know that this disease is due to a specific organism, the Klebs-Loeffler bacillus. By every analogy, this organism is found only in the bodies of persons suffering from diphtheria, or of other persons who are either not ill at all or are suffering from a "sore throat" too mild to need a physician. We have therefore held that every case of diphtheria must be due to contact with a case or a "carrier," and that most cases are due to contact with a "carrier" rather than a recognized case of diphtheria.

No single problem of public health has engaged more closely the attention of sanitarians. Effort after effort has been made—many on a pretentious scale—to work out the relation between carriers and diphtheria of the clinical type, but with little success.

For example, very recently the U. S. Public Health Service has conducted a splendid and comprehensive piece of work of this kind in Detroit. Out of over 4,000 persons examined, 38 were found to harbor, in their throats or noses, bacteria presenting every appearance of diphtheria bacilli. In just half of these cases, that is, 19, were they able to get the organism in "pure culture," and of these 19 only 2 proved finally to be virulent diphtheria bacilli. In other words, in an extensive investigation, consuming the time of several able workers for some months, only two persons really dangerous to the community as diphtheria carriers were located.

But, if our conclusions in regard to skin diphtheria are correct, we have here the means of locating, by easily recognizable clinical symptoms, a group of individuals of whom a very large proportion, probably not less than fifty per cent., are carriers of virulent bacilli of diphtheria.

For example, we asked our former bacteriologist, Prof. A. H. Straus, to look into a few cases in order to confirm our work. He located promptly three children with skin sores. Remember, these cases were to be found by the dozens without difficulty. His cultures showed one organism which he regarded as the Hoffman bacillus, while the other two showed typical Klebs-Loeffler bacilli. These two organisms were isolated in pure culture and tested for virulence. Both proved to be virulent. Thus, from three children, with external appearances making them easy to find, it was possible to locate the same number of carriers of virulent diphtheria germs as was found in the Detroit experiment as the result of examining over 4,000 cultures.

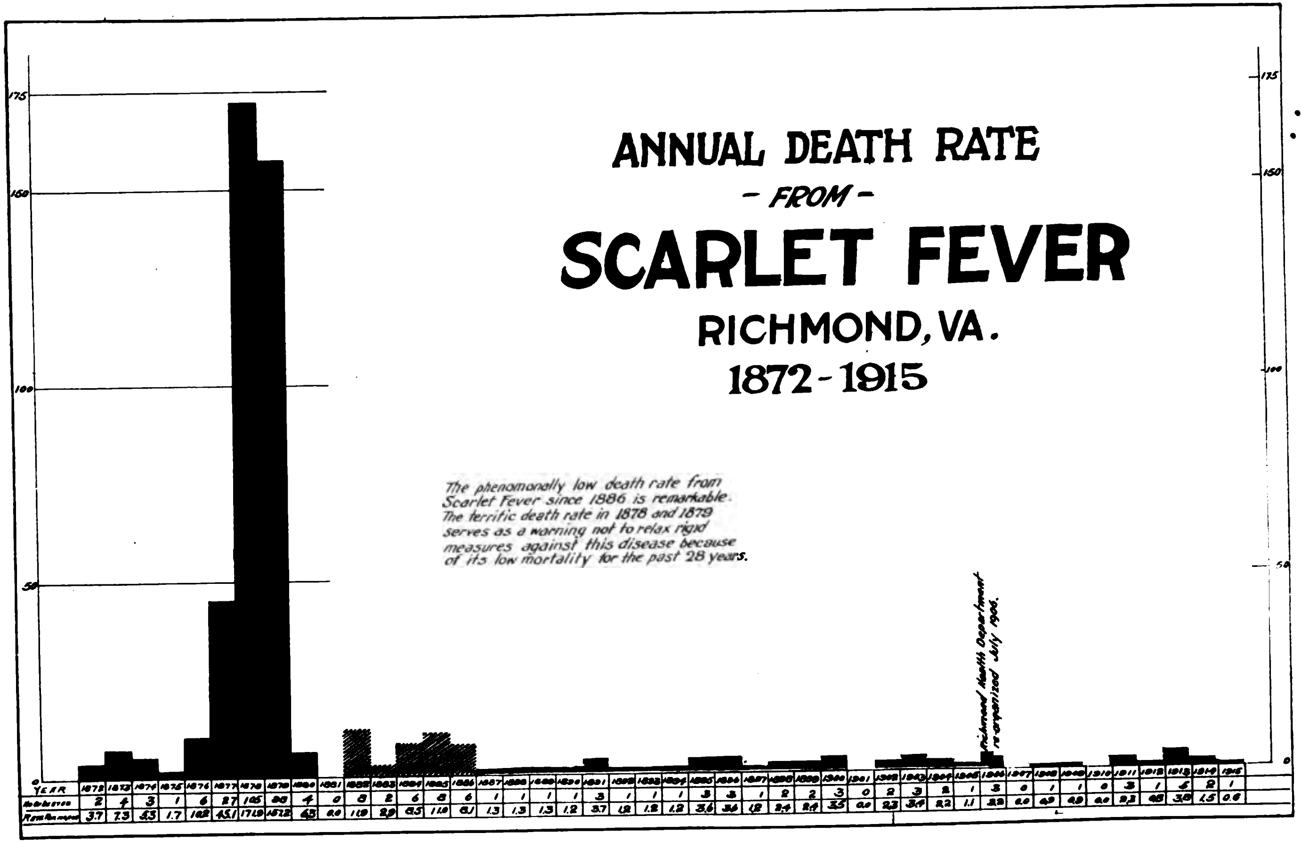
More work is, of course, needed to confirm the above conclusions. We have tried to eliminate every source of error so far as our limited means of conducting this work made possible, and we have little doubt of its accuracy. Should these results be confirmed by other observers, it would seem as if a practical measure of very great importance has been added to our previous means of controlling diphtheria.

SCARLET FEVER.

There were 246 cases of scarlet fever reported to the Health Department during 1915, with 1 death, equivalent to a death rate of .6 per 100,000 inhabitants. The following table gives the number of deaths and the death rate per 100,000 for each year since 1872, a period of 44 years.

Table Showing the Annual Number of Deaths from Scarlet Fever and the Anual Death Rate per 100,000 *in the City of Richmond, Virginia, from* 1872 *to* 1915.

YEAR	DEATHS FROM SCARLET FEVER		YEAR	DEATHS FROM SCARLET FEVER	
	Number of Deaths	Death Rate per 100,000		Number of Deaths	Death Rate Per 100,000
1872	2	3.7	1895	3	3.6
1873	4	7.3	1896	3	3.6
1874	3	5.3	1897	1	1.2
1875	1	1.7	1898	2	2.4
1876	6	10.2	1899	2	2.4
1877	27	45.1	1900	3	3.5
1878	105	171.9	1901	0	0.0
1879	98	157.2	1902	2	2.3
1880	4	6.3	1903	3	3.4
1881	0	0.0	1904	2	2.2
1882	8	11.9	1905	1	1.1
1883	2	2.9	1906	3	3.2
1884	6	8.5	1907	0	0.0
1885	8	11.0	1908	1	.9
1886	6	8.1	1909	1	.9
1887	1	1.3	1910	0	0.0
1888	1	1.3	1911	3	2.3
1889	1	1.3	1912	1	.8
1890	1	1.2	1913	5	3.8
1891	3	3.7	1914	2	1.5
1892	1	1.2	1915	1	.6
1893	1	1.2			
1894	1	1.2			



ANNUAL DEATH RATE
- FROM -
SCARLET FEVER
RICHMOND, VA.
1872-1915

The phenomonally low death rate from Scarlet Fever since 1886 is remarkable. The terrific death rate in 1878 and 1879 serves as a warning not to relax rigid measures against this disease because of its low mortality for the past 28 years.

YEAR	[illegible]	[illegible]
1872	2	3.7
1873	4	7.3
1874	3	5.5
1875	1	1.7
1876	6	10.2
1877	27	45.1
1878	105	171.9
1879	98	157.2
1880	4	6.3
1881	0	0.0
1882	8	11.9
1883	2	2.9
1884	6	8.5
1885	8	11.0
1886	6	8.1
1887	1	1.3
1888	1	1.3
1889	1	1.3
1890	1	1.2
1891	3	3.7
1892	1	1.2
1893	1	1.2
1894	1	1.2
1895	3	3.6
1896	3	3.6
1897	1	1.2
1898	2	2.4
1899	2	2.4
1900	3	3.5
1901	0	0.0
1902	2	2.3
1903	3	3.4
1904	2	2.2
1905	1	1.1
1906	3	3.3
1907	0	0.0
1908	1	0.9
1909	1	0.9
1910	0	0.0
1911	3	2.3
1912	1	0.8
1913	5	3.5
1914	2	1.5
1915	1	0.6

Combining the figures in the above table, we get the following average annual number of deaths and average annual death rate from scarlet fever in Richmond for five-year periods.

PERIOD	AVERAGE ANNUAL MORTALITY FROM SCARLET FEVER	
	Number of Deaths	Rate per 100 000
1872-1874 (3 years)	3.0	5.4
1875-1879 (5 years)	47.4	77.2
1880-1884 (5 years)	4.0	5.9
1885-1889 (5 years)	3.4	4.6
1890-1894 (5 years)	1.4	1.7
1895-1899 (5 years)	2.2	2.6
1900-1904 (5 years)	2.0	2.3
1905-1909 (5 years)	1.2	1.2
1910-1914 (5 years)	2.2	1.7
1911-1915 (last 5 years)	2.4	1.8
1915	1.0	.6

There is very little for me to say in comment on the above figures, as I have so regularly referred in my annual reports to the remarkable record of Richmond in connection with scarlet fever.

The most outstanding features which are brought out in the above tables and in the diagram are (1) the very high mortality from this disease in 1877, 1878 and 1879 and (2) the almost negligible mortality for the past 29 years, that is, since 1886. During this latter period the average annual number of deaths has been 1.7 and the average annual death rate has been 1.8 per 100,000 inhabitants.

As repeatedly stated by me, I am unable to give any explanation of the almost complete immunity of Richmond from fatal scarlet fever during the past 29 years. As also stated repeatedly, we must never be misled by this into regarding scarlet fever as having no menace for us. We have only to look at the figures and the diagram for the years 1877, 1878 and 1879 to see what this disease is capable of doing.

Scarlet fever, which has caused only 49 deaths in Richmond in the past 29 years, caused exactly twice that number of deaths (98) in 1879 and more than that (105 deaths) in 1888. We do not know how to explain this, but we must believe that scarlet fever may at any time appear in a very fatal form again. Should this happen, two things are likely to follow: (1) our more complete work would probably hold down the fatality to a lower level than in those terrible years, (2) no work, however intelligent and thorough, could prevent a tremendously higher death rate from scarlet fever than has been known in Richmond for a third of a century.

MEASLES.

The year 1915 was distinctly not a "measles year," there having been but 39 cases reported—36 white and 3 colored. For the first time since 1904, there was no death from this disease. The well-known alternation of years of high and low mortality leads us to look for another measles year in 1916.

The following table gives the number of deaths and the death rate from measles for each year since 1880, a period of 36 years:

Table Showing the Annual Number of Deaths and the Annual Death Rate from Measles, Richmond, Virginia, 1880-1915.

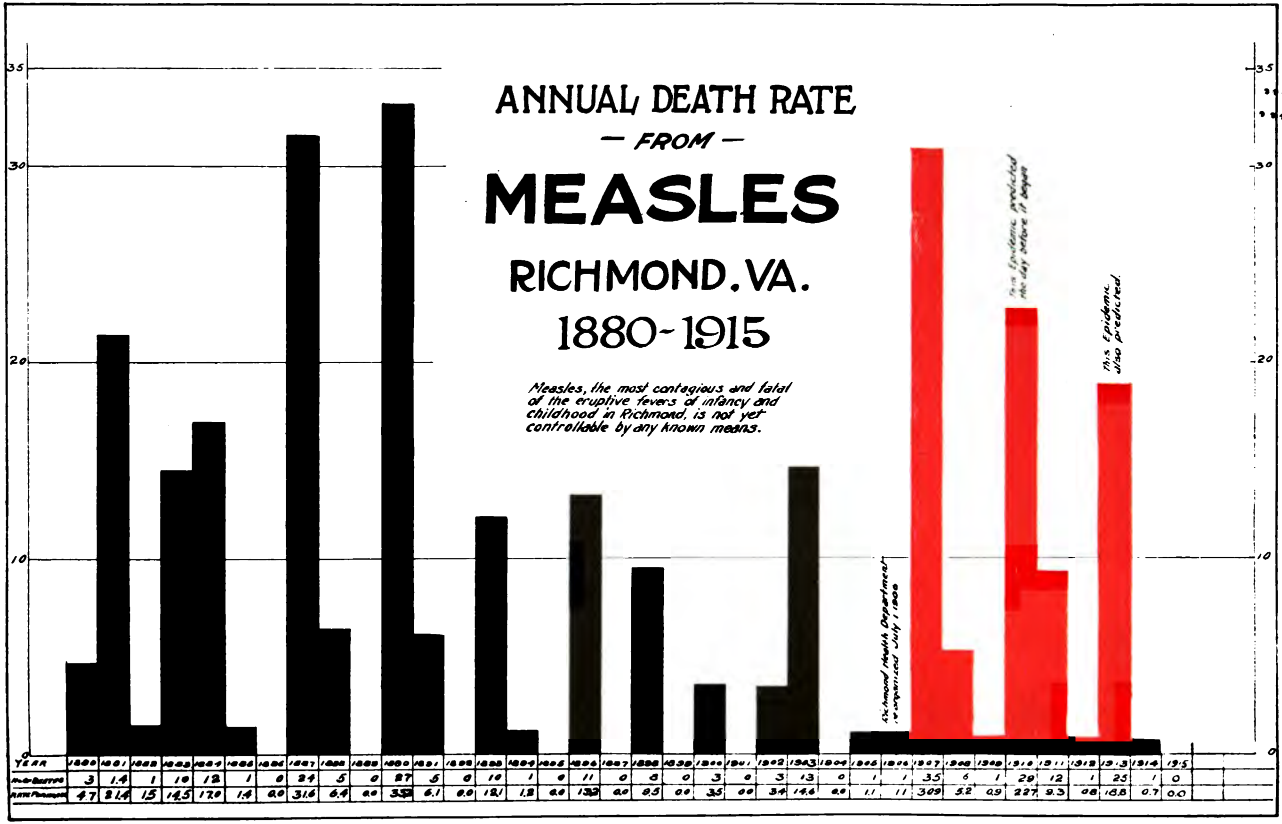
YEAR	No. of Deaths	Annual Death Rate per 100,000	YEAR	No. of Deaths	Annual Death Rate per 100,000
1880	3	4.7	1900	3	3.5
1881	14	21.4	1901	0	0.0
1882	1	1.5	1902	3	3.4
1883	10	14.5	1903	13	14.6
1884	12	17.0	1904	0	0.0
1885	1	1.4	1905	1	1.1
1886	0	0.0	1906	1	1.1
1887	24	31.6	1907	35	30.9
1888	5	6.4	1908	6	5.2
1889	0	0.0	1909	1	.9
1890	27	33.2	1910	29	22.7
1891	5	6.1	1911	12	9.3
1892	0	0.0	1912	1	.8
1893	10	12.1	1913	25	18.8
1894	1	1.2	1914	1	.7
1895	0	0.0	1915	0	0
1896	11	13.2			
1897	0	0.0			
1898	8	9.5			
1899	0	0.0			

The following table gives the annual average number of deaths and the annual average death rate from measles by periods of five years:

PERIOD	MORTALITY FROM MEASLES	
	Number of Deaths	Rate per 100,000
1884 (5 years)	8.0	11.8
1889 (5 years)	6.0	7.7
1894 (5 years)	8.6	10.7
1899 (5 years)	3.8	4.5
1904 (5 years)	3.8	4.3
1909 (5 years)	8.8	7.8
1914 (5 years)	13.6	10.5
1915 (last 5 years)	7.8	5.9
1915	0.0	0.0

The death rates given in the first of the above tables are shown graphically in the accompanying diagram:

A study of the first of the above tables, and especially a study of the diagram, enables us to forecast with considerable confidence the measles



ANNUAL DEATH RATE
— FROM —
MEASLES
RICHMOND. VA.
1880-1915

Measles, the most contagious and fatal of the eruptive fevers of infancy and childhood in Richmond, is not yet controllable by any known means.

YEAR	1880	1881	1882	1883	1884	1885	1886	1887	1888	1889	1890	1891	1892	1893	1894	1895	1896	1897
No. of Deaths	3	1.4	1	10	12	1	0	24	5	0	27	5	0	10	1	0	11	0
Rate Per [illegible]	4.7	21.4	1.5	14.5	17.0	1.4	0.0	31.6	6.4	0.0	33.2	6.1	0.0	12.1	1.2	0.0	13.2	0.0

YEAR	1898	1899	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915
No. of Deaths	8	0	3	0	3	13	0	1	1	35	6	1	29	12	1	25	1	0
Rate Per [illegible]	9.5	0.0	3.5	0.0	3.4	14.6	0.0	1.1	1.1	30.9	5.2	0.9	22.7	9.3	0.8	18.8	0.7	0.0

situation for the next few years. In 1910 the measles epidemic which occurred that year was predicted; this was also done in 1913. This was based on a study of the diagram covering previous years. It was seen, at the close of 1909, that the death rate from measles in Richmond for 1907, 1908 and 1909 was almost exactly parallel to the death rate for 1887, 1888 and 1889. It was therefore confidently predicted that an epidemic was due in 1910, following the parallel in 1890. This epidemic came on time. In the same way the 1913 epidemic was predicted.

Further study of the diagram leads us now to look for a measles epidemic in 1916. But closer study of the diagram shows that we have not only the annual fluctuation between years of high and low mortality from measles. In addition to these shorter waves, the diagram clearly brings out the existence of a longer wave—twenty years in length. It also shows that this longer wave is now on the decline.

In view of all the above, we venture to predict not only that there will be an epidemic of measles in 1916 but that the mortality in this epidemic will be less than it was in the epidemics of 1907, 1910 and 1913. Whether this lower mortality will be due to a smaller number of cases or to a lower case fatality cannot be stated. Measles was not made a reportable disease in Richmond until 1907, so we have no means of knowing anything except the number of deaths and the death rate in any year prior to that time.

WHOOPING COUGH.

There were 10 deaths from whooping cough during 1915, equivalent to a death rate of 6.5 per 100,000 inhabitants, against 61 deaths and a death rate of 45.2 in 1914. The year 1915 was thus neither a whooping cough year nor an off year for this disease.

Whooping cough, taking its mortality year in and out, is by far the most fatal contagious disease of infancy and childhood in Richmond. In 1914 it caused more than twice as many deaths as typhoid fever, malarial fever, scarlet fever, diphtheria and measles combined. Even though, as above stated, 1915 was not a whooping cough year, nevertheless it caused ten deaths, while scarlet fever, diphtheria and measles combined caused only eight.

The following table gives the number of deaths and the death rate per 100,000 inhabitants from whooping cough in Richmond for the past forty-five years.

Table Showing the Annual Number of Deaths and the Annual Death Rate from Whooping Cough, in Richmond, Virginia, 1871-1915.

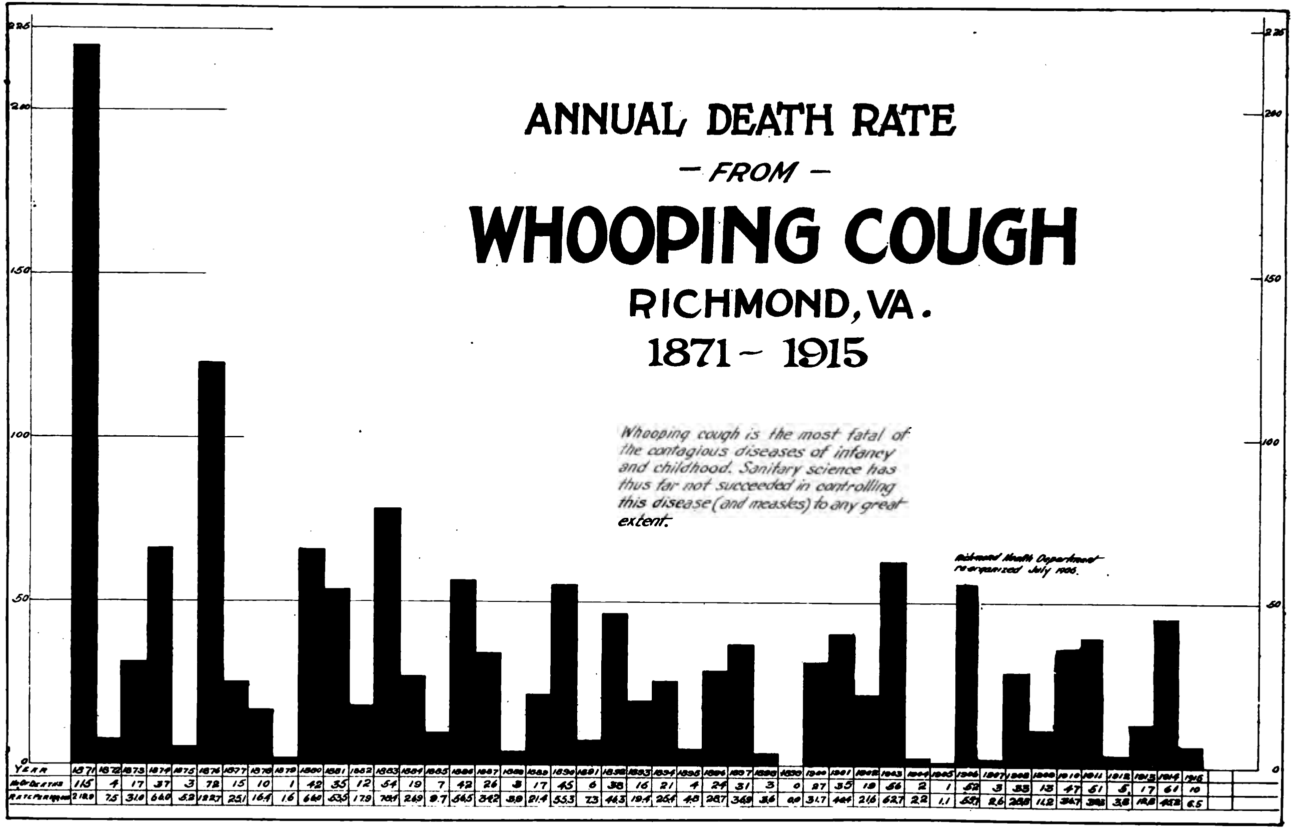
YEAR	DEATHS FROM WHOOPING COUGH		YEAR	DEATHS FROM WHOOPING COUGH	
	Number of Deaths	Death Rate per 100,000		Number of Deaths	Death Rate per 100,000
1871	115	219.9	1895	4	4.8
1872	4	7.5	1896	24	28.7
1873	17	31.0	1897	31	36.9
1874	37	66.0	1898	3	3.6
1875	3	5.2	1899	0	0.0
1876	72	122.7	1900	27	31.7
1877	15	25.1	1901	35	40.4
1878	10	16.4	1902	19	21.6
1879	1	1.6	1903	56	62.7
1880	42	66.0	1904	2	2.2
1881	35	53.5	1905	1	1.1
1882	12	17.9	1906	52	55.7
1883	54	78.4	1907	3	2.6
1884	19	26.9	1908	33	28.8
1885	7	9.7	1909	13	11.2
1886	42	56.5	1910	47	36.8
1887	26	34.2	1911	51	39.4
1888	3	3.9	1912	5	3.8
1889	17	21.4	1913	17	12.9
1890	45	55.3	1914	61	45.2
1891	6	7.3	1915	10	6.5
1892	38	46.3			
1893	16	19.4			
1894	21	25.4			

The following grouping of the figures in the above table shows the average annual number of deaths and the average annual death rate from whooping cough in five-year periods since 1871:

PERIOD	AVERAGE ANNUAL MORTALITY FROM WHOOPING COUGH	
	Number of Deaths	Rate per 100,000
1871-1874 (4 years)	43.3	81.1
1875-1879 (5 years)	20.2	34.2
1880-1884 (5 years)	32.4	48.5
1885-1889 (5 years)	19.0	25.1
1890-1894 (5 years)	25.2	30.7
1895-1899 (5 years)	12.4	14.8
1900-1904 (5 years)	27.8	31.7
1905-1909 (5 years)	20.4	20.0
1910-1914 (5 years)	36.2	27.6
1911-1915 (last 5 years)	28.8	21.6
1915	10.0	6.5

SMALLPOX.

There were 16 cases of smallpox, reported or discovered, in Richmond during 1915. Of these 10 were white and 6 colored. Not one of these persons had ever been successfully vaccinated. No one of the



ANNUAL DEATH RATE

– FROM –

WHOOPING COUGH

RICHMOND, VA.

1871 – 1915

Whooping cough is the most fatal of the contagious diseases of infancy and childhood. Sanitary science has thus far not succeeded in controlling this disease (and measles) to any great extent.

YEAR	NO OF DEATHS	RATE PER 100000
1871	115	218.9
1872	4	7.5
1873	17	31.0
1874	37	66.0
1875	3	5.2
1876	72	122.7
1877	15	25.1
1878	10	16.4
1879	1	1.6
1880	42	66.0
1881	35	53.5
1882	12	17.9
1883	54	78.1
1884	19	26.9
1885	7	9.7
1886	42	56.5
1887	26	34.2
1888	3	3.8
1889	17	21.4
1890	45	55.3
1891	6	7.3
1892	38	44.5
1893	16	19.4
1894	21	26.4
1895	4	4.8
1896	24	28.7
1897	31	36.9
1898	3	3.6
1899	0	0.0
1900	27	31.7
1901	35	40.4
1902	19	21.6
1903	56	62.7
1904	2	2.2
1905	1	1.1
1906	52	55.1
1907	3	2.6
1908	33	28.8
1909	13	11.2
1910	47	34.7
1911	51	38.3
1912	5	3.8
1913	17	12.8
1914	61	45.2
1915	10	6.5

MU

cases died. The entire number of white cases developed in a single group. The initial case was not seen or diagnosed during illness. During the entire time he was up and about. He contracted the disease in City Point. This case was found in tracing the origin of secondary cases (of which there were 9) contracted from this initial case.

After we were put on the track of the first of these cases which was reported to the Department (and this case was itself reported to us as chicken pox), there was no further spread of the disease, although the history of the initial case and several of the others showed that they had been going freely about town—one in a barber shop, another at motion picture shows, etc.,—while broken out.

The report of our Medical Inspector, Dr. Summers, gives several very interesting points in connection with smallpox in Richmond during 1915. I refer you to this report for further information.

TUBERCULOSIS.

There were 263 deaths from pulmonary tuberculosis (consumption) in Richmond during 1915, equivalent to a death rate of 170.0 per 100,000 population, against a rate of 183.1 in 1915. Of these 263 deaths from consumption, 108 were white (110.2 per 100,000) and 155 were colored (273.6 per 100,000).

There were 30 white deaths and 36 colored due to other forms of tuberculosis.

The death rate from tuberculosis has been slowly but constantly declining. The actual reduction is, I am confident, decidedly greater than the figures show on the surface. In former years quite a number of deaths actually due to tuberculosis were regularly attributed to other causes. For example, we know positively that nearly all of the deaths attributed to malaria were really due to consumption. From 1904 to 1907, inclusive, a period of four years, the average annual number of deaths attributed to malarial fever was 22.8, or 23.1 per 100,000 inhabitants. In the past three years there has been altogether only two deaths (both colored) attributed to this disease, *.4 per 100,000 per annum.

Now, there is no question but that a very large proportion of these deaths assigned to malaria from 1904 to 1907 were actually due to consumption, and they are now being properly so assigned by the attending physicians. Tuberculosis has, thus, from this one cause alone, to stand an extra burden of at least 15 per 100,000, assuming that two-thirds of the malaria deaths in former years were due to consumption. Other diseases than malaria have likewise been relieved of deaths improperly assigned to tuberculosis in former years. In consideration of these facts, it is certain that even a stationary death rate from tuberculosis would mean an actual declining death rate. But in spite of all this, our death rate from tuberculosis shows a very decided and steady decline. This decline is, however, undoubtedly much greater than the figures would indicate.

There remains a very great amount of work to be done in connection with tuberculosis if we would be in position to claim that we were really doing all we could to lessen the ravages of this disease. We are, as a matter of fact, barely scratching the surface. We, are, however, doing the best we can with the insufficient means at our disposal.

INFANTILE DIARRHEA

For the fourth consecutive year, there was a decided decrease in the death rate from infantile diarrhea, that is, diarrhea and enteritis under two years. The number of deaths from this disease was 101, equivalent to a death rate of 65.3 per 1,000 inhabitants, the lowest death rate from infantile diarrhea in Richmond on record.

The number of deaths from infantile diarrhea and the death rates per 100,000 inhabitants for the past nine years are shown in the following table:

YEARS	DEATHS FROM INFANTILE DIARRHEA (Under Two Years)	
	Number of Deaths	Death Rate per 100,000 Inhabitants
1907	161	142
1908	140	122
1909	147	126
1910	169	132
1911	196	151
Annual average	163	135
1912	132	100
1913	112	84
1914	97	72
1915	101	65
Annual average	110	80

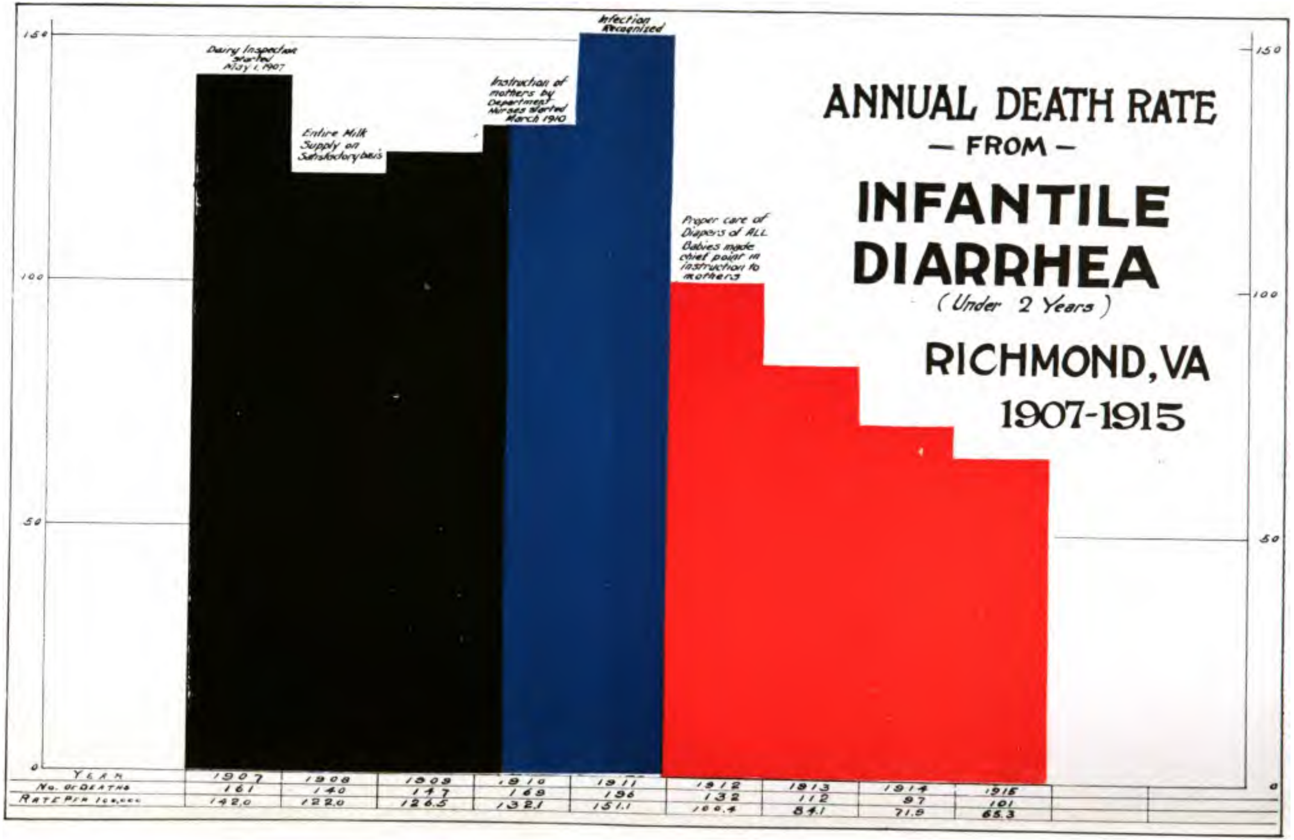
The above table shows a decrease of 40.7 per cent. in the average annual death rate from infantile diarrhea from 1912 to 1915 as compared with the average anual death rate from this disease from 1907 to 1911. The single year 1915 had 52 per cent. fewer deaths from infantile diarrhea than the annual average from 1907 to 1911.

The figures given in the above table are shown graphically in the accompanying diagram:

Comparison of the Annual Death Rate from Infantile Diarrhea During the Five-Year Period 1907-1911, *Inclusive, and the Four-Year Period*, 1912-1915.

	FIVE YEAR PERIOD 1907-1911, inclusive	FOUR-YEAR PERIOD 1912-1915, inclusive
Annual average	135	80
Highest year	151	100
Lowest year	122	65

So decided and sustained is the reduction in the death rate from infantile diarrhea, as is shown in the above tables, and diagram, beginning with the year 1912, that no argument is needed to prove that some decided new factor entered into the case in 1912.



ANNUAL DEATH RATE
— FROM —
INFANTILE
DIARRHEA
(Under 2 Years)
RICHMOND, VA
1907-1915

YEAR	1907	1908	1909	1910	1911	1912	1913	1914	1915		
No. of Deaths	161	140	147	169	196	132	112	97	101		
Rate per 100,000	142.0	122.0	126.5	132.1	151.1	100.4	84.1	71.9	65.3		

During the entire period covered by the tables and diagram the milk supply of Richmond was on a very satisfactory basis. While it is true that the milk supply has been better and better each year, this does not account for the reduction. Neither is the reduction due entirely to the simple fact of our having put on nurses in March, 1910, for the purpose of instructing mothers in the care of their babies, since the death rate from infantile diarrhea did not decline in 1910 and 1911. Indeed, it rose. This does mean that the nurses failed to accomplish good. They accomplished great good, but it would appear that not even their good work was able to overcome what would have been a far greater increase in these two years, on the principle of normal fluctuations from year to year, alluded to above.

With an excellent milk supply during the entire nine years and with instructive nurses employed since March, 1910, what was the new factor which entered into the case in 1912 and which has been steadily and strongly pulling down the death rate from infantile diarrhea from that time on?

The answer is plain. It has been stated in each of my last annual reports, so it will not be gone into very fully in this one. Of course, each year that witnesses a still further decline in the death rate from infantile diarrhea serves to confirm the correctness of the deductions which have been the basis of work along this new line.

Convinced in 1911 that infantile diarrhea must be regarded as an infectious disease and handled, from an epidemiological standpoint, as such, the nurses of the Health Department were instructed, late in the fall of that year (1911), to give each mother directions how to take care of the excreta of her baby.

We believe that it is not enough to look out simply for the stools of babies with diarrhea and see that this infectious material is rendered harmless, but— and for this we claim originality—we further believe that the excreta of a considerable proportion of all babies—sick and well—harbors the germ (or germs) of this disease, and to reach such "carriers," we must endeavor to have all mothers in the city make proper disposition of the diapers of their babies.

The nurses were told they must teach mothers that human excrement is always very dangerous and must tell each mother exactly how she should handle these diapers to render them harmless. This was started first in 1912. That this teaching is correct is shown by the reduction in the death rate from infantile diarrhea from 1912 on.

Space will not admit of my repeating the steps by which we arrived at the conclusion that a very large part of all fatal cases of infantile diarrhea are caused by infection. This has been discussed by a few observers for some years. But observation after observation of ours confirmed us in this belief beyond all question.

This much admitted, the conclusion is inevitable that the infectious material is thrown off in the bowel discharges. But, so far as we can learn, no one had gone beyond this to the inevitable conclusion that we must have carrier cases to consider—well babies whose bowel discharges contain the germs which can give the disease to other babies if their food is contaminated by such discharges.

We also claim priority in calling attention to the simple fact that the bowel discharges of babies do not get into the sewer until they are put there by the act of a second person and that until these discharges are put into the sewer they lie around—on the baby or about the room and house—where they constitute the same menace which we have long recognized in the case of adult excreta.

In other words, it has apparently been altogether overlooked by sanitarians that in a completely sewered city the entire fecal matter of the community did not promptly get into the sewer. We had been regarding the completely sewered city as one in which we no longer had to consider the menace of human excrement.

Taking as normal a birth rate of 25 to 30 per 1,000 per annum and assuming that from 10 to 15 per cent. of all babies die in their first year and 2 to 5 per cent. of the survivors die in their second year, we find that a normal population is made up of from 2.1 to 2.7 infants under one year and from 4.1 to 5.3 under two years.

Stating these results in round numbers, about 2.5 per cent. of a normal population—or 1 in 40—consists of babies under one year of age, and 4.5 per cent.—or 1 in 22—consists of babies under two years of age. Yet sanitarians, recognizing the tremendous danger of scattered human excrement, had been preaching sewers—and, where these could not be had, sanitary privies—and had felt that the danger was practically done away with when every house was provided with either a water closet or a sanitary privy. But here we have from 2.5 to 4.5 per cent. of the entire community not directly reached by these measures.

When these matters suddenly made themselves plain to us we felt absolutely confident that we had hit on the means of greatly lowering the death rate from infantile diarrhea—not in Richmond alone but anywhere that work based on these considerations was put into effect. The facts are so plain that there is no room for error.

Hence it did not need even one year's results to corroborate the correctness of these conclusions. Knowing the fluctuation in the death rate from infantile diarrhea from year to year, and knowing also the difficulty of getting mothers to realize the importance of looking after the bowel discharges of their babies, we would not have felt that failure to secure a lower death rate from infantile diarrhea the first year would disprove these conclusions.

But we did not have to fall back on any attempt to show that a stationary, or even a rising, death rate from infantile diarrhea was not proof that our conclusions were wrong. The above tables and diagram show that when policies based on these conclusions were put into effect the effect was immediate and since then it has each year been better and better.

INFANT MORTALITY.

Decline in infant mortality is universally recognized as one of the most constant results of efficient public health work. As is the case in connection with every other index of this kind, before we can properly claim results, we must first be sure of the accuracy of our statistics and then very careful in their interpretation.

As I have so frequently stated in these reports, there is a normal fluctuation in the death rate, both from special causes and from all causes combined, from year to year. This is certainly true of the death rate among infants. Hence we must be very cautious in not drawing deductions from figures covering too short a period. When, on the other hand, efforts directed against certain diseases, or against deaths from all causes in a certain group, are followed, year after year, by a declining mortality from these special diseases, or in this special group, we are pretty sure of our ground.

There would certainly seem to be no question as to the relation between the death rate of infants under one year of age in Richmond and the work which has been done by the Richmond Health Department.

There were 442 deaths of infants under one year of age in Richmond in 1915—the smallest actual number for any year in the past ten. More than this, 48 of these 442 deaths occurred in the territory annexed late in 1914 and not included in our statistics prior to 1915. So there were only 394 deaths under one year in the territory covered by our statistics of previous years.

The following table gives the total number of deaths under one year for each of the past eight years, together with the death rate for this age period calculated (1) as deaths per 1,000 living births, (2) per 1,000 inhabitants of all ages, and (3) as percentage of deaths at all ages.

Deaths of Infants Under One Year of Age.

YEAR	Number of Deaths	DEATH RATE		Percentage of Deaths at all Ages
		Per 1,000 Births	Per 1.000 Population	
1908	530	189	4.62	21.3
1909	525	185	4.52	21.8
1910	623	228	4.87	21.6
1911	534	181	4.12	19.7
1912	528	172	4.02	19.5
1913	508	162	3.81	18.7
1914	509	161	3.78	19.1
1915	442	127	2.85	15.1

The reason for calculating the infant mortality in three different ways in the above table is that there are certain weaknesses in connection with each method, but, as these differ in each case, giving all three methods eliminates, to a great extent, the errors of each.

The above table shows that, in whatever way stated, there has been a steady and marked decrease in infant mortality in Richmond.

The most reliable method of calculating infant mortality would be as deaths per 1,000 living births, but for the fact that the reporting of births is not complete. Hence the column giving this rate shows only the number of deaths under one year per 1,000 reported births. This column shows a steady decrease, with the exception of the year 1910. The actual number of infant deaths was highest in that year and the reported birth rate was lowest. Hence the death rate per 1,000 births was decidedly higher than in any other year.

The column giving the number of infant deaths per 1,000 population at all ages has the weakness of being greatly influenced by any change in the age distribution of the population. As there has been annexation of new territory twice in the period covered by the table (1910 and 1915 being the years in which such annexation affects the figures given), such change is not improbable. But the marked increase in the 1910 rate was not greatly influenced thereby, while the actual falling off in the number of deaths in 1915, in spite of the larger population of the new city, shows that there was great falling off in the infant death rate that year.

The last column compares the deaths among infants under one year with the total number of deaths at all ages. It is evident that this column would not show a declining percentage if deaths at other ages had decreased at the same rate as had deaths under one year. In 1910 the total death rate of the city took a decided jump. The result of this was that, although there were 98 more deaths among infants than there were in 1909, the last column shows a lower figure for 1910 than for 1909. With the exception of 1910, however, every year in the above table had a lower total death rate than the preceding year. Hence the marked decrease in this last column shows that the infant death rate has declined even more markedly than the general death rate.

COMPARATIVE MORTALITY OF THE WHITE AND COLORED RACES.

With monotonous regularity, year after year, I have called attention to the tremendously greater death rate among our colored people than among our white. In 1914 the colored death rate was 82 per cent. higher than the white; with non-resident decedents, both white and colored excluded, it was 99 per cent. higher. For the preceding three years, the colored rate was about 67 per cent. higher.

In 1915 the colored death rate exceeded the white rate by 48 per cent., which was the smallest excess since I have been in office. With a constantly lowered general death rate, it is evident that these statements mean that the reduction in the colored death rate has been even greater than the reduction in the white rate.

So remarkable was the decreased colored death rate in 1915, that it was but slightly higher than was the death rate for the entire population—white and colored—in 1907, the first full year that I was in office. In 1907 the general death rate of Richmond was 23.38 per 1,000; in 1915 the colored death rate was 23.75 per 1,000.

The following table gives a comparison of the white and colored death rate from a number of important causes. Brief comment will be on a few of these. Up to 1914, the colored death rate from typhoid fever was—with the exception of a single year—decidedly lower than the white rate. In 1914 the colored death rate from this disease was 2.37 times the white rate, while in 1915 the colored rate was 3.75 times the white rate. But this must not be misunderstood. It simply means that in former years, when the total death rate from typhoid fever in Richmond was several times as high as it has been in more recent years, the colored rate was very low in comparison with the white rate. As the death rate from typhoid fever has been lowered, the white rate has been affected more than the colored rate, so that, although the colored rate is now lower than in former years, it is much higher than the white rate.

In connection with four diseases covered in the comparative table it is impossible to give any ratio between the white and colored death rate. No death in either race occurred from measles. There was no death from malarial fever or whooping cough among the white population and no death from scarlet fever among the colored. It is interesting to note that whooping cough—the disease which has a very fluctuation mortality from year to year, and which, on the average is the most fatal of all the acute diseases—caused 10 deaths among the negro population and none among the white.

Consumption and respiratory diseases had a death rate, roughly, two and a half times as high among the negroes as among the whites. This is the case year after year. Further comment is unnecessary, as the following table gives the comparative white and colored mortality in connection with the chief causes which are likely to be of interest.

Table Showing Comparative Mortality of the White and Colored Races from Certain Causes in Richmond, Virginia, During 1915.

CAUSE OF DEATH	No. of Deaths		Death Rate per 100,000*		Ratio of Colored Death-Rate to White
	White	Col'd	White	Col'd	
Typhoid fever—					
Including nonresidents	6	13	6.1	23.0	3.75
Residents only	4	12	4.1	21.2	5.19
Malarial fever	0	1	....	1.8	....
Measles	0	0	....	....	....
Scarlet fever	1	0	1.0	....	....
Whooping cough	0	10	....	17.6	....
Diphtheria (including croup)	5	1	5.1	1.8	.35
Influenza	19	17	19.4	30.0	1.55
Dysentery	3	10	3.1	17.6	5.77
Tetanus	3	4	3.1	7.1	2.31
Pellagra	20	5	20.4	8.8	.43
Consumption	108	155	110.2	273.6	2.48
Other forms of tuberculosis	36	30	36.7	53.0	1.44
Syphilis	14	18	14.3	31.8	2.22
Cancer (of all organs)—					
Nonresidents included	99	25	101.0	44,1	.44
Residents only	75	21	76.5	37.1	.48
Diabetes	15	7	15.3	12.4	.81
Apoplexy	111	90	113.2	158.9	1.40
Other diseases of the nervous system	179	132	182.7	233.0	1.28
Organic heart disease	179	131	182.7	231.3	1.27
Bright's disease	172	84	175.5	148.3	84
Heart and Bright's disease combined	351	215	358.1	379.5	1.06
Pneumonia (lobar or unqualified)	78	110	79.6	194.2	2.44
Bronchopneumonia	38	70	38.8	123.6	3.19
Lobar and bronchopneumonia combined	116	180	118.4	317.8	2.68
All diseases of the respiratory system (consumption not included); that is, Group IV of the International Classification	150	242	153.1	427.2	2.79
Diarrhea (under 2 years)	53	48	54.1	84.7	1.57
Diarrhea (over 2 years)	26	7	26.5	12.4	.47
Appendicitis—					
Including nonresidents	26	11	26.5	19.4	.73
Residents only	11	6	11.2	10.6	.94
Diseases of the puerperal state	16	13	16.3	23.0	1.41
Congenital debility	89	72	90.8	127.1	1.40
Senile debility	11	5	11.2	8.8	.79
Legal electrocution	1	10	1.0	17.6	17.30
Suicide	15	4	15.3	7.1	46
All other violent deaths	90	81	91.8	143.0	1.56
Ill-defined or unknown	12	34	12.2	60.0	4.90
Total deaths, all causes—					
Including nonresidents	1,576	1,346	1,608	2,375	1.48
Residents only	1,370	1,284	1.397	2.267	1.62

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*All rates in this table are calculated from the official figures of the U. S. Bureau of the Census for the 1915 midyear population. These figures are: White, 98,018; colored, 56,656.

AVERAGE AGE AT TIME OF DEATH.

The average age at time of death of all who died in Richmond during 1915 was 38.88 years, or 38 years, 10 months and 17 days. For white decedents the average age was 44.92 years, or 44 years, 11 months and 1 day. For colored decedents the average age was 31.80 years, or 31 years, 9 months and 18 days.

The average age at time of death showed a most decided increase, both for the entire number of decedents and for the white and colored. For all decedents the increase was 2 years, 5 months and 17 days; for white decedents, 1 year, 6 months and 21 days; for colored decedents, 1 year, 10 months and 20 days.

As I have repeatedly stated, the average age at time of death is of little or no value in comparing one community with another but has value for comparing one year with another in the same community. It is of interest to note that not only was the average age at time of death very much greater in 1915 than it was in 1914, but it was decidedly greater than for any other year on record for our city. The next highest year was 1912. The average age in 1915 was 1 year, 9 months and 23 days greater than in 1912.

Two factors were probably responsible for the very great advance in the average age at time of death in 1915—the decided lowering in the number of deaths of infants under one year of age, discussed elsewhere in this report, and the annexation of new territory, with, in all probability, a more favorable age distribution of the population in this new territory.

BIRTHS.

There were 3,473 births reported to the Health Department during 1915. Of these 1,113 were white males and 1,118 were white females, a total of 2,231 white births; 641 were colored males and 601 colored females, a total of 1,242 colored births.

Owing to the fact that the year 1915 was the first to take into account the large addition to Richmond's population by annexation in November, 1914, the number of births reported to the Department was very much greater than in any previous year. It was 318 more than in 1914. But, on the other hand, the additional number of births was not in proportion to the increase in population, the total birth rate being 22.45 per 1,000 population, against a rate of 23.38 in 1914. The white rate was 22.76 per 1,000 population, against 22.98 in 1914. The colored rate was 21.92, against 24.08 in 1914.

As the territory annexed has a large proportion of young married persons, the birth rate in this territory may fairly be assumed to be at least as high as in the old city. Evidently, then, the reporting of births in Richmond in 1915 was less complete than in 1914. At times one cannot but feel discouraged in connection with the reporting of births. Every effort has now been made for ten years to secure full returns, but constant effort to get these returns must be kept up. Of the births finally reported, a considerable proportion is, year after year, secured only by following up every clue to locate unreported births and get the certificates from the attending physician, after having located the unreported infant. This demands constant vigilance and consumes a great deal of time on the part of our registrar, our sanitary officers and our nurses—time which, with our very limited force, could be profitably devoted to other matters.

Since I have been in office I have tried always to get reports—not only of births but also of contagious diseases—through securing the active and willing co-operation of the medical profession, rather than by reporting delinquents to court. This policy has been followed not because of timidity but because it has seemed so much better. The doctor who has been haled into court does not thereafter entertain the most cordial good feelings to the Health Department, such good will as is one of the most helpful things imaginable in a score of ways. But the time seems really to have arrived when a firmer policy will have to be followed.

The following table gives the number of births reported to the Richmond Health Department each year since 1900, when our ordinance requiring the reporting of births went into effect.

Year	Number of Births Reported.	Reported Birth-Rate per 1,000.
1900*	818	9.61
1901	729	8.42
1902	752	8.55
1903	666	7.46
1904	636	7.02
1905	608	6.61
1906†	1,133	12.13
1907‡	2,311	20.37
1908	2,806	24.44
1909	2,839	24.44
1910‡	2,734	21.37
1911	2,940	22.74
1912	3,069	23.49
1913	3,135	23.74
1914	3,155	23.38
1915‡	3,473	22.45

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*The present ordinance requiring the reporting of births went into effect in 1900.

†Health Department reorganized July 1, 1906.

‡Annexation of new territory in each of these years.

MILK SUPPLY.

As always, the great importance of control of the city's milk supply from a health standpoint, the complicated nature of many of its phases and the inevitable and frequent changes of conditions combine to make discussion of the work done by the Health Department in connection with its efforts to control the milk supply a very important part of the annual report.

TUBERCULIN TESTING.

Up to April, 1913, no special measures were directed by the Richmond Health Department against bovine tuberculosis. It was believed that we should defer action in this connection until after a number of other matters in the milk situation had been placed on a satisfactory basis.

At the time above mentioned the Board of Health adopted a rule requiring, after May 1, 1913, that all new shippers of milk must have herds free from tuberculosis as demonstrated by the tuberculin test and that all cows added to old herds should comply with the same requirement.

A year later, March 30, 1914, the Board of Health took the next step, by adopting a rule that, on and after September 1, 1915, all herds from which milk came into Richmond should be free from tuberculosis as shown by the tuberculin test. In allowing what seemed to us an ample time (seventeen months) from the adoption of this rule until it went into effect, we hoped that the testing would be gradually done, thus avoiding a shortage of milk and also allowing time for the replacing of reacting animals.

Under the rule of April, 1913, a number of herds had been tested. Besides this, a number of herds had been tested by individual dairymen, for their own protection and because they felt they might as well get the testing over and done for.

In all, probably between fifty and sixty herds had been tested. The losses, through reactors, had been quite light except in a few instances. It was therefore confidently believed that tests of the remaining herds would show up in about the same way. When, however, a small number of dairymen close to Richmond (and it is from these that Richmond gets almost its entire supply of milk and cream) came to be tested, the percentage of reactors was very much higher, in fact several herds were almost completely wiped out.

It seemed almost certain, in the light of these facts, that to insist on general, compulsory tuberculin testing by September 1, 1915, would result in the ruin of a number of dairymen and a great shortage in our milk supply, since experience of the dairymen had clearly shown that dairy cows guaranteed free from tuberculosis, under a three months' clause, were simply not to be had in any considerable numbers.

The explanation of the great and vital difference between the percentage of reactors in the fifty or sixty herds first tested and that found in herds near the city was not difficult. The more distant herds had nearly all been assembled from farmers who owned a few cows, which had never been in large herds and thus never exposed to bovine tuberculosis. On the other hand, our nearby producers had been for years trying to build up herds of a good dairy type of animals. In doing this they had frequently gone outside of the State and had gotten into their herds a number of animals which, probably "plugged," had reacted on the next test after purchase. It then became apparent that, while it was not by any means an impossible, or even an especially difficult, matter to get any number of cows which would stand the tuberculin test, these cows were not at all of the dairy type. Their small production did not stand in the way of their being useful to the farmer who lived on cheaper land some distance from Richmond, but they could not profitably be kept on the more expensive land near the city.

When these facts were ascertained, it seemed absolutely necessary to postpone for a long time the enforcement of compulsory testing of all herds. Consequently, three years additional time was allowed by the Board of Health. But it was evident that the matter could not be allowed to rest there. There were many reasons for this.

First, while believing that only a very small proportion of all human tuberculosis is due to the bovine bacillus ingested with milk from reacting animals, and while this amount was believed to be so small that little risk was involved in not insisting on the pasteurization of milk from untested cows, it seemed best to provide that, with extension of the time for testing prolonged for three years, pasteurization of milk from untested herds should be required. Protection against bovine tuberculosis is far from being the chief reason why so many of the leading sanitarians teach that all milk should be pasteurized. From a health standpoint, pasteurization is done mainly as a safeguard against the acute contagious and infectious disease of man himself—notably typhoid fever, diphtheria and scarlet fever. Therefore to insist on pasteurization of all milk from untested herds emphasizes the wrong thing.

In the second place, a number of dairymen, believing that they would be forced to test their herds prior to September 1, 1915, did what appeared to be the wise thing and tested their herds well before the expiraiton of the time limit. These men had followed just the advice we had given them—to test early—and they had, in consequence, sustained heavy losses. It thus came about that the dairymen who put off testing and who, in many instances, would most probably have fought us strongly, would after all escape the necessity of testing. This was, evidently, not a pleasant thing to consider.

GRADING THE MILK SUPPLY.

The situation was indeed a difficult one, but the remedy was found. It was necessary to find some means whereby the dairymen who had not tested would be allowed to put this off and pasteurize their milk, while, at the same time, those dairymen who had tested and rid their herds of tuberculosis would be rewarded for having done so.

Grading the milk supply hit the situation exactly. But in order to have this grading accomplish the end in view, it was necessary to grade rather differently from the standards set by the National Commission on Milk Standards. For us it was highly important that all our Grade A milk should be from tuberculin tested herds—whether this milk was to be sold raw or pasteurized. Of course tuberculin tested herds constituted only one of several requirements for the production of Grade A milk.

After considerable thought and consultation with men familiar with the grading system, the following rules were adopted:

GRADE A MILK.

Grade A Raw Milk shall come from cows free from disease, as determined by the tuberculin test and physical examinations by a qualified veterinarian, approved by the Chief Health Officer. It shall be produced and handled by employees free from disease, as determined by medical inspection by a qualified physician. It shall be produced under sanitary conditions such that the bacteria count at the time of delivery to the consumer shall not exceed 25,000 per cubic centimeter in the cooler months (that is, from November first to March thirty-first, inclusive) or 50,000 during the rest of the year (that is, from April first to October thirty-first, inclusive). Dairy farms producing this grade of milk shall score at least 80 points on the score card of the United States Bureau of Animal Industry, of which not less than 45 points shall be for "methods."

Grade A Pasteurized Milk shall conform in every respect to the requirements for Grade A raw milk. The bacteria count shall at no time prior to pasteurization exceed the limits allowed for Grade A raw milk, and the bacteria count when delivered to the consumer shall not exceed 5,000 per cubic centimeter.

GRADE B MILK.

Grade B Milk shall come from cows free from disease as determined by physical examinations, of which at least one each year shall be by a qualified veterinarian approved by the Chief Health Officer. It shall be produced and handled under sanitary conditions such that the bacteria count at no time exceeds 250,000 per cubic centimeter. All milk of this class shall be pasteurized under the official supervision of the Richmond Health Department, and the bacteria count at the time of delivery to the consumer shall not exceed 25,000 per cubic centimeter. Dairy farms producing this class of milk shall score at least 70 on the score card of the United States Bureau of Animal Industry, but a score of not less than 65 will be permitted until June 1, 1916.

CREAM.

Cream shall be classified in the same grades as milk, in accordance with the requirements for the grades of milk, excepting the bacteria standards. In 20 per cent. cream the bacteria count shall not exceed five times the count allowed in the corresponding grade of milk.

It will be noted by those familiar with the recommendations for the grading of milk made by the National Commission on Milk Standards that the grades adopted by the Richmond Board of Health are very much higher. For Grade A Raw Milk the requirements are the same except that the Commission allows a bacteria count of 100,000 per c. c. while we require that there shall not be over 25,000 bacteria per c. c. in the winter months and 50,000 in the summer months.

When, however, we come to Grade A Pasteurized Milk the difference is great. The Commission does not require tuberculin testing for this grade, allows a dairy score as low as 65 and a bacteria count, in the raw milk, up to 200,000. Our rules recognize only one grade of milk as "A." If this milk is pasteurized it becomes Grade A Pasteurized Milk.

Our Grade B Milk is in every respect the Grade A Pasteurized Milk of the Commission on Milk Standards except that in this grade the count of the raw milk must not exceed 250,000, against 200,000 allowed by the Commission, and we allow the count after pasteurization to go as high as 25,000 against 10,000 for Grade A Pasteurized of the Commission. After June 1, 1916, we require for our Grade B a dairy score of not less than 70, while for Grade A Pasteurized the Commission requires a score of not less than 65.

Thus, every bit of the milk sold in Richmond will comply almost exactly with the Grade A of the National Commission on Milk Standards.

In departing from the definition of grades as recommended by the Commission, we did so after very full consideration of the pros and cons. Being myself a member of the Commission, I was entirely familiar with the Commission's position that their grades were to be regarded as based on minimum standards. While, of course, we could have had the satisfaction of having our entire milk supply in Richmond in the Grade A class, this would, after all, have amounted to not grading at all.

Being late in the completing of this report, I am able to add that now (April 3d), after a month and a half of being on the graded basis, everything seems to come up to our highest expectations. The dairymen have found it to their advantage and the consumer knows just what milk he is getting. Those dairymen who have had their herds tested are in position to sell Grade A Milk—provided, of course, they come up to the other requirements of that grade—and, since this grade commands 11 cents a quart, retail, against 10 cents for Grade B, they thus profit by having tested. On the other hand, the man who is not able to get into Grade A because he has not tested his herd cannot complain. He can get into Grade A by doing just what the others in that class have done.

FOOT AND MOUTH DISEASE.

Early in 1915 we went through a very anxious time in connection with foot and mouth disease. Illness among the cows in one of the largest dairy herds supplying milk to the Richmond market led to the calling in of a local veterinarian. For several days this veterinarian did not recognize the nature of the trouble. On Saturday, February 27th, another veterinarian saw the cows and, strongly suspecting foot and mouth disease, called in the State authorities. The diagnosis was confirmed. The matter was then promptly reported to the Richmond Health Department and to the United States Bureau of Animal Industry.

It being then late in the day, and the farm having been at once rigidly quarantined, our Dairy Inspector, Mr. Strauch, reported the matter to me early next morning (Sunday, February 28), within a few minutes after I arrived in Richmond from a brief business trip to New York, and we both went at once to this farm.

Federal and State authorities were on hand and were doing everything possible. A large proportion of the entire herd of about 300 animals was infected. The exact means of infection could not be determined. It was known that foot and mouth disease had been found at several places in the country.

Following the accepted course, the entire herd was condemned. Fortunately the cows had not been moved into a new model cow barn, so this was not infected.

There are many points in connection with this disease which are unknown. Its high degree of contagiousness is recognized, making extraordinary precautions necessary. News of the presence of foot and mouth disease in this herd spread rapidly among the dairymen and through the city. In order to bring the real facts plainly before them and to acquaint them with precautionary measures, a special meeting of the dairymen was called for the same afternoon, and, in spite of the short notice, this was largely attended. At this meeting Mr. Strauch and I, in consultation with the dairymen, outlined a plan of action for protection of our milk supply. The immediate control of the herd and the establishment of rigid quarantine of the infected farm were left with the Federal and State authorities.

A special meeting of the Board of Health was held on the following afternoon, Monday, March 1. At this meeting the Board endorsed the steps which Mr. Strauch and I had already taken and adopted officially the measures which we recommended for protecting our milk supply. The menace, of course, lay in the uncertainty as to whether other herds had already been infected or would become so from the same source—which was never accurately determined—as the original herd.

At this same meeting of the Board of Health, a resolution was adopted and forwarded to the City Council for their adoption, authorizing the Richmond Health Department to proceed with whatever measures they deemed necessary and providing for the refund of whatever amount should be expended in putting these measures into effect, up to a total cost not to exceed $3,000.00. This resolution was adopted the same night by the City Council, at its regular monthly meeting.

PRECAUTIONS TAKEN.

Men, especially appointed for the purpose, were stationed at each railway station, for the purpose of detecting and returning to the shipper any milk, cream or buttermilk which might have been shipped into Richmond without a permit.

Two men were stationed at each of the two large distributing plants in Richmond, for the purpose of attending to the cleansing and disinfecting of the hoofs of horses hauling milk to these plants. It was thought possible that, if foot and mouth disease, unrecognized, were to appear on any dairy farm from which milk came to these stations, infectious material might be brought in on the horses' hoofs and thus convey the disease to other horses which came to these stations. Every dairyman was urged to cleanse and disinfect the hoofs of his own horses, just before they entered the road on their way to the city.

For the further protection of the consumers, all milk was ordered to be pasteurized, since it is believed that foot and mouth disease may be contracted by human beings, although the disease is said to be quite mild in man.

While this Department acted primarily for the protection of the health of the people, and also to prevent the spread of the disease from herd to herd by reason of the coming together in the city of teams from many dairy farms, the State and Federal authorities worked more especially to check the disease. Some anxious days were passed. One very gratifying feature was the really splendid way in which these various agencies co-operated in the work.

As a result of the extraordinary precautions which were taken, there was no further spread of the disease beyond the herd originally affected.

After some days spent in digging a suitable trench, every head of cattle on the infected farm was shot, tumbled into the trench, the hide slashed (to prevent its being recovered and used), the carcasses were covered with quick lime and the trench was then closed.

While, as stated above, the City Council authorized us to spend as much as $3,000.00, the actual amount expended was $348.50. One of the most effective means of co-operation between our Department and the Federal authorities was in having our Dairy Inspector, Mr. Strauch, accompany the veterinarians from the United States Bureau of Animal Industry in their farm-to-farm inspections for the detection of other infected herds. Being familiar with the location of every dairy farm, the work of the Bureau was thus greatly facilitated.

The perfect control of the situation was highly gratifying. Not a single case of this highly contagious and serious disease appeared beyond the farm originally infected. The splendid team work of the United States Bureau of Animal Industry, the State Veterinarian, the State Dairy and Food Commissioner and the Richmond Health Department certainly contributed to this happy outcome.

DAIRY INSPECTIONS.

During 1916 our work of inspection of dairy farms was carried on as in previous years. On account of the stand taken by the Department in respect to tuberculin testing, we changed our score card on January 1, 1915. The score card previously used by us was the score card which the Dairy Division of the U. S. Bureau of Animal Industry got out in May, 1907, just when our work was begun. Since then there have been several changes in the official score card. We, however, have not thought it best heretofore to make any change, since to do so would have made it impossible to compare our scores with those of previous dates and thus note our progress.

REASON FOR LOWER DAIRY SCORES IN 1915.

Owing to the difference between the new score card and the old, when we made the change on January 1, 1915, the result was at once to make our scores much lower than they had been before.

From what I have seen of the dairies from which a number of other cities get their milk supply I have no hesitancy in saying that our scoring is far more rigid than theirs. Not from my own observation but from what others have unanimously stated, there is not the slightest question but that Richmond dairy farms are on a higher plane in every way than those of any other city of anything like our size. Yet some of these other cities publish scores of their dairy farms which make a better showing than ours. Of course everything depends on how the scoring is done. I wish very much that there were some practical way of getting a competent and unprejudiced man to score our dairy farms and those of a few other cities which I have in mind, in order that an authoritative comparison could be made.

In every annual report from 1907 to 1913, I gave a table showing, by months, the percentage of our dairy farms falling in each of several classes arranged by ten-point differences in their score. This table took in every month from May, 1907, when our work was started. In my last (1914) annual report I stated that this table had become too cumbersome. The following table gives a summary by years. Anyone wishing the figures by months can get these from the 1913 annual report.

Table Showing the Percentage of Dairy Farms in the Various Classes from May, 1907, *Through December,* 1915—*Summary by Years.*

CLASS	PERCENTAGE OF ALL DAIRY FARMS INSPECTED DURING THE YEAR WHICH FELL IN EACH CLASS								
	YEAR								
	1907	1908	1909	1910	1911	1912	1913	1914	1915*
Scoring below 30	6.0	......	......	......	......	......	......	......	......
Scoring between 30 and 40	13.2	......	......	......	......	......	......	......	......
Scoring between 40 and 50	26.3	0.2	......	.....	......	......	......	......	......
Scoring between 50 and 60	30.1	3.2	0.3	......	....	......	......	......	1.9
Scoring between 60 and 70	18.3	27.6	20.8	2.5	......	......	......	......	33.8
Scoring between 70 and 80	5.2	43.1	51.7	47.4	40.4	23.8	17.0	16.9	52.3
Scoring between 80 and 90	0.9	23.1	23.1	42.4	55.2	72.9	79.2	80.2	99.8
Scoring between 90 and 100	......	2.8	4.1	7.7	4.4	3.3	3.8	2.9	2.2
Average of all scores for the year	50.4	74.1	75.8	80.5	81.3	82.5	82.8	82.8	72.2

*As explained above, the lower scores in 1915 were due to the fact that on January 1, 1915, the use of a different score card was started. During the eight years, 1907-1914, inclusive, there was no change in the score card which was used. The new score card differs greatly from the old in the relative importance given to the various items.

The following table gives by months the percentage of the dairy farms falling in the different classes during 1915.

Table Showing the Percentage of Dairy Farms in the Various Classes for Each Month During 1915.

CLASS	PERCENTAGE OF ALL DAIRIES INSPECTED FOR THE MONTH WHICH FELL IN EACH CLASS DURING 1915											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept	Oct.	Nov.	Dec.
Scoring 50—60	6.7	1.0	1.7	4.2	0.9	0.8	......	1.7	2.5	......	2.8	......
Scoring 60—70	36.2	45.1	37.5	31.1	37.0	32.3	30.4	25.2	29.7	32.3	25.9	43.0
Scoring 70—80	49.5	43.1	48.3	51.3	50.0	54.0	58.0	59.7	53.0	54.6	59.3	47.2
Scoring 80—90	6.7	8.8	10.0	10.9	9.3	10.5	8.9	11.7	13.2	10.1	10.2	7.4
Scoring 90—100	0.9	2.0	2.5	2.5	2.8	2.4	2.7	1.7	1.6	3.0	1.8	2.4
Average of all scores for the month	70.6	71.0	71.7	71.8	72.3	72.7	72.9	73.3	72.8	73.0	72.8	71.4

At the risk of tiresome repetition, I wish to make it plain that the lower scores, as shown in the above tables, than we have had for a number of years are due entirely to a different score card which was adopted on January 1, 1915, and that this does not in any way mean that our dairies have gone back or that the milk supply of Richmond is in any way inferior to what it has been before.

On the contrary, there has been still further advance in the quality of the milk. The report of the City Bacteriologist shows that 45.6 per cent. of all our regular market milk during 1914 contained less than 10,000 bacteria per cubic centimeter; 38.3 per cent. between 10,000 and 50,000, and 8.4 per cent. between 50,000 and 100,000. Thus, nearly half of our entire supply was up to the bacterial standard for certified milk, and 92.3 per cent. was up to the bacterial standard for Grade A Raw Milk as defined by the National Commission on Milk Standards. Practically all of it was up to the bacterial standard, as defined by the Commission, for milk which, after pasteurization, qualifies as Grade A Pasteurized Milk.

The percentage of our milk which contained under 10,000 bacteria per cubic centimeter was slightly lower in 1915 than in 1914, but the percentage containing between 10,000 and 50,000 was greater, and the percentage with high counts was much less. In 1914, 5.1 per cent. contained over 250,000, while in 1915 only 2.8 per cent. was over 250,000.

The improvement in the bacterial content of our milk supply is shown by the "bacterial index," which has been as follows:

Year.	Bacterial Index.
1912	85.9
1913	85.0
1914	87.6
1915	89.2

GENERAL SANITARY WORK, NUISANCES, ETC.

In no direction was better work done during 1915 than in what is commonly known as sanitary work. With a force of only eight sanitary officers for the entire city, with an area increased to twenty-four square miles, it is utterly impossible to make this service all that it should be. The reports of our Chief Sanitary Officer, Mr. W. T. Tuck, and the other sanitary officers show the great volume of work accomplished.

Two special lines of work have been pushed with all the power possible—control of privies and horse stables. Two men have been kept constantly at work on stables. The improvement which has been brought about is remarkable. There are now in Richmond very few horse stables which have not been brought up to our requirements—both as to the stable itself and the handling of manure. That this work, of primary importance in connection with fly breeding, will bring its results cannot be doubted.

Most important of all, constant supervision of all privies in the city has been carried on by a special sanitary officer assigned to this work. So long as there remain any of these abominations in our limits, the best we can do is to see that every privy is constructed and maintained in accordance with our requirements. No house to which water and sewer services are available is allowed to have a privy, but there are still a number of houses which cannot get these services.

During the coming year I hope we will be able to conduct further experiments in connection with the control of the house fly. There remains a number of matters to be studied in this connection. If we are able to conduct these experiments, I am confident that new facts of importance will be brought out.

FUTURE NEEDS AND DUTIES.

In the preceding portion of this report I have shown the great, and in a number of directions the really remarkable, results which have been accomplished by the Richmond Health Department in the past nine years. To the attaining of these results everyone connected with the Department has contributed, from the members of the Board itself to the last appointed inspector. This report would be most incomplete unless this team work were gratefully and fully acknowledged.

But in reviewing the things which have been done, the dominant thought in my mind is not one of complacent satisfaction. On the contrary, I am most conscious of a full realization that what has been done so far is little more than merely scratching the surface. Indeed, for a long time I have felt that we should be doing many things which we are not doing at all, and doing better many of the things which we are doing.

When the Richmond Health Department was reorganized, in July, 1906, such increased powers, funds and additional officers as were given us—either at once or for the first few years following—were secured merely on the ground that we would thereby accomplish for Richmond some of those things which sanitary science, practically applied, had been able to bring about elsewhere. We had only promises to offer. But, as the years went by, we were able to show, absolutely without exception, results always equal to what we had promised and, in even more instances, results which exceeded even our own most sanguine expectations.

And realization of this has not been confined to ourselves. A large part of our people have seen for themselves, and certain phases of the work of the Richmond Health Department have received generous recognition outside of our city itself.

Certainly under these conditions one would naturally expect that the Department would secure, on the basis of results actually accomplished, far more liberal support than was given on the basis of mere promises. Unfortunately, this has not been the case. We have seen the city grow, by three annexations of new territory, from five square miles of territory to twenty-four square miles, while our population has increased seventy per cent. and is scattered over this greatly increased area.

But, as an example of failure to secure the support which we need so badly, one Medical Inspector is expected to do as well now as before, and we have lost three good men in this position, one after the other, because a city the size of Richmond would not give a salary which others have offered for our trained men.

We need more sanitary officers, more nurses, more clerical help, more food inspectors, another dairy insyector, to say nothing of more money for a score of necessary policies which we can practically guarantee would be the means of further lessening illness and saving lives.

It is discouraging, beyond my power to put into words, to know that the Department could increase so greatly its usefulness to the city and yet not to be allowed to do it.

We need, in addition to the things above mentioned, more physicians for school inspections. We need to make a start in the study of that most difficult and immensely important public health measure, the housing conditions of our city. We need to branch out into industrial hygiene and sanitation. We need men and money for controlling many nuisances inimical to health, especially flies and mosquitoes.

EDUCATION OF THE PEOPLE IN HEALTH MATTERS.

Of fundamental importance we need many times what we are able to spend at present for education of the people in health matters. This work itself should properly constitute a division of the Health Department, with a competent man at its head to plan and put into effect policies which would reach all the people and instruct them in personal hygiene and in the ways in which every citizen can help make more effective the work of the Health Department.

This offers an almost limitless field for usefulness. By means of the newspapers, special bulletins, lectures of many kinds, health exhibits and even lantern slides shown at all the motion picture houses—by these and, perhaps, other methods—we should be able to hammer in the lessons of health in such a way that every man, woman and child in the City of Richmond would be taught how, to protect his health by personal application of the principles of hygiene and by co-operating with the Health Department in such things as the individual cannot do for himself.

There is no department of the government which should be brought so close to the people. Every citizen should be made to feel that the Health Department is his department. He should understand its work and what it means to him personally and to his family.

But to accomplish even half of all this means lots of work, hard work, intelligent work, sustained work. It can be done and it should be done. But it cannot be done on $500.00 a year—the maximum amount which we have been able to devote to it!

HEALTH LEAGUES.

Somewhat along the same line is the organization of public health leagues throughout the city. Many health problems are peculiarly local—for example, the fly and the mosquito problem. With the limited number of sanitary officers at our disposal, it is out of the question for us to cover the whole city in such a way as to control these nuisances. But if the citizens in a given small area—say from twenty-five to fifty blocks—were to organize properly they could do it. Such a local league

RICHMOND HEALTH DEPARTMENT.

should first familiarize themselves with the most important principles of certain health problems. Such instruction should, above all things, be sound. They should then go on to the question of means of control. Committees should themselves make inspections in their section. If a neighbor is found to be breeding flies in his badly constructed and carelessly managed stable—thereby subjecting hundreds of others to the nuisance of flies and their menace to health, to say nothing of the expense of fly screens—they would automatically compel such a man to cease being a nuisance and menace and expense to his neighbors. No one could stand such pressure.

This is but an illustration of what the kind of health league I have in mind could accomplish. Ultimately, after a sufficient number of such local leagues had been organized and got in running order, they could combine and make a general municipal health league, covering the entire city.

It is impossible to exaggerate what such a plan as the above, properly carried out, could accomplish. With all the people alive to the importance of public health work, believing in it, knowing that sanitary science and hygiene, practically applied, actually can prevent illness and prolong life, we could accomplish, right here in Richmond, results which would make all that the Richmond Health Department has thus far done "look like thirty cents."

And yet I am perfectly confident that such a plan is entirely feasible. To carry it out would mean only the question of getting the funds to do it. The first thing, of course, would be to get a good man, at a proper salary, to take it in hand. He would start local leagues. Literature and talks would be necessary to get the people aroused to the fact that by their own efforts they can accomplish wonders. Education of the people themselves would be of fundamental importance. Unless these leagues are guided by sound principles they would be capable of infinite harm; for they could create demand for unwise measures, having no really important health aspects.

EXHIBITS.

As part of the educational work of the Richmond Health Department, an exhibit has been maintained throughout the year in the Chamber of Commerce building.

For the fifth consecutive year we had an exhibit at the State Fair. A great deal of new material was added for our 1915 exhibit. As usual, this exhibit attracted a great deal of interest, and, being seen by a large number of visitors, was undoubtedly of great educational value.

CONCLUSION.

It is with a deep feeling of sadness that I come to the close of this report; for it is the last annual report which I will make to the Board of Health. A change in the charter of the City of Richmond will place the Health Department under other control about the middle of the present year, 1916.

With every hope that the work of the Department will not be handicapped by this change, I would be little appreciative of the work of the Board of Health and of the cordial personal relations between the Board and the Chief Health Officer if I did not feel truly grieved that these relations will so soon be severed.

The Richmond Health Department, as at present organized, was created in June, 1906. This was done after a thorough inquiry on the part of a committee from the City Council, aided by the advice of Prof. W. T. Sedgwick, of the Massachusetts Institute of Technology. During the time which has since elapsed—nearly ten years—there has been not a single change in the personnel of the Board of Health. That the present system has worked well is proved by the fact that in these ten years there has never been even a suggestion that the health work of Richmond was handicapped by weakness in that system, and by the further fact that the routine work has gone on smoothly and situations of special difficulty have been successfully and promptly met.

And all this has been done in a quiet, unassuming manner by the Board of Health. As for the personal relations between the Board and myself, as Chief Health Officer, there has been nothing left to desire. Always showing the utmost spirit of co-operation, always kind and considerate, yet never slighting any obligation, there has grown up between us a feeling of respect and affectionate regard.

As our official relations are so soon to terminate, there can be no impropriety in my expressing myself as I have done above. I am sure every officer and employee shares these feelings.

The people of Richmond will always hold in grateful remembrance the faithful and unselfish work done by Dr. W. T. Oppenhimer, Dr. R. D. Garcin, Mr. James R. Gordon, Dr. M. D. Hoge, Jr., and Mr. James E. Phillips, Jr., throughout the ten years during which they have served as members of the Board of Health of the City.

Respectfully submitted,

E. C. LEVY, M. D.,
Chief Health Officer.

FINANCIAL STATEMENT—SUMMARY.

Account	Appropriation.	Expended,	Balance.
Pay roll	$31,585 00	$31,386 19	$198 81
Expense	....	8,512 30	
Sanitary Improvement of milk supply	16,448 50*	4,556 72	25 17
Tuberculosis campaign	....	3,163 57	....
Educational campaign	....	190 74	....
Special vaccination	1,000 00	678 25	321 75
Smallpox quarantine and Hospital	1,400 00*	1,203 63	196 37
	$50,433 50	$49,691 40	$742 10

Total appropriations as above		$50,433 50
Reimbursements:		
Unexpended balance as above	742 10	
Food permits	698 00	
Total reimbursements		$ 1,440 10
Net cost of maintenance of the Health Department for the year, 1915		$48,993 40

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*$600.00 transferred from Smallpox Quarantine to Expense.

PAY ROLL.

Chief Health Officer	$ 3,300 00	
Medical Inspector	2,000 00	
Registrar of Vital Statistics	1,350 00	
Clerk.	1,080 00	
Bacteriologist.	2,000 00	
Stenographer	780 00	
Fumigator	1,000 00	
Plumbing Inspector	1,600 00	
*Assistant Plumbing Inspector	1,162 90	
Food Inspector	1,200 00	
Assistant Food Inspector	1,000 00	
Chief Sanitary Officer	1,200 00	
Sanitary Officer, 1st District	1,000 00	
Sanitary Officer, 2nd District	1,000 00	
Sanitary Officer, 3rd District	1,000 00	
Sanitary Officer, 4th District	1,000 00	
Sanitary Officer, 5th District	999 95	
†Sanitary Officer, 6th District	916 67	
†Sanitary Officer, 7th District	916 67	
District Physician, 1st District	900 00	
*District Physician, 2nd District	880 00	
District Physician, 3rd District	900 00	
District Physician, 4th District	900 00	
District Physician, 5th District	900 00	
District Physician, 6th District	900 00	
District Physician, 7th District	900 00	
†Assistant to District Physicians	600 00	
Total disbursement for pay roll		$ 31,386 19

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*Loss of time in changing employees.

†These officers began work February 1, 1916.

EXPENSE.

Assistant to Medical Inspector	$ 287 00
Advertising	5 04
Binding and ruling	61 24
City Directory	6 00
Disinfectants	417 25
Diphtheria antitoxin	887 90
Electric batteries and lamps	43 07
Electrotypes	29 28
Extra sanitary officers	150 00
Extra nurse, diphtheria	266 57
Express, drayage, etc.	39 44
Extra clerk	37 50

Extra stenographer	86 00	
Furniture	16 75	
Food for quarantined patients	28 65	
Hire of horse	11 00	
Insurance on automobile	49 95	
Laboratory supplies	382 32	
Multigraph supplies	1 00	
Motorcycle supplies	21 15	
Miscellaneous	53 33	
Oil of peppermint	2 75	
Postage	262 20	
Printing	370 06	
Repairs, storage and supplies to automobile	718 86	
Stationery	157 07	
Tolls over bridge (5th Street)	15 54	
Telephones	134 90	
Towel and soap supply	12 00	
Typewriter, rent, supplies, etc.	55 78	
Services of intubator	327 00	
Expense in connection foot and mouth disease	348 50	
Infant Work:		
Extra nurse hire	180 00	
Instruments, scales and supplies	47 20	
Salary of nurses	3,000 00	
Total disbursement for expense		$ 8,163 80

SANITARY IMPROVEMENT OF MILK SUPPLY.

Automobile repairs, storage and supplies	$ 347 61	
Board of horse	265 75	
Ear tags and punch for tested cows	54 36	
Help in lebarotary	357 50	
Insurance on automobile	49 95	
Repairs and supplies to bicycle	11 75	
Repairs to buggy and harness and shoeing horse	38 45	
Salary of Dairy Inspector	1,500 00	
Salary of Assistant Dairy Inspector	1,000 00	
Traveling expenses of Dairy Inspector	931 35	
Total disbursement for sanitary improvement of milk supply		$ 4,556 72

TUBERCULOSIS CAMPAIGN.

Disinfectants	$ 90 00
Drugs for dispensaries	131 85
Electric lights	4 72
Fuel for dispensaries	17 50

Janitor and help hire	123 00	
Milk	50 00	
Paper napkins	65 00	
Repairs at dispensaries	5 00	
Rent for Third Street Dispensary	240 00	
Salary of nurses	1,560 00	
Services of chiefs of clinics	720 00	
Sputum cups and holders	156 50	
Total disbursement for tuberculosis campaign		$ 3,163 57

EDUCATIONAL CAMPAIGN.

Books	$ 19 58	
Exhibit at Fair	147 52	
Exhibit at Jacksonville	1 25	
Photos of dairy barns	10 84	
Picture frames	11 55	
Total disbursement for educational campaign		$ 190 74

SPECIAL VACCINATION.

Service of Vaccinators	$ 102 50	
Telephone	19 50	
Vaccine virus	536 25	
Dr. W. J. West	20 00	
Total disbursement for special vaccination		$ 678 25

SMALLPOX QUARANTINE AND HOSPITAL.

Cutting wood at Hospital	$ 20 00	
Dr. W. J. West	35 00	
Food at Smallpox Hospital	124 87	
Food for patients quarantined at home	196 24	
Fumigators	90 00	
Guard and help at Hospital	424 34	
Household supplies at Hospital	17 64	
Hire of horse	66 00	
Instruments and drugs	2 75	
Nurse hire	133 24	
Repairs to pump and well	10 15	
Repairs to wagon and harness	24 90	
Telephone	58 50	
Total disbursement for Smallpox Quarantine and Hospital		$ 1,203 63

TABLES

AND

SUBSIDIARY REPORTS

TABLE

Showing Number of Marriage Licenses

MONTH	1906 White	1906 Colored	1907 White	1907 Colored	1908 White	1908 Colored	1909 White	1909 Colored
January	35	24	41	24	44	34	37	28
February	41	32	40	27	43	22	45	51
March	22	29	35	29	34	24	37	72
1st Quarter	98	85	116	80	121	80	119	151
April	73	46	71	56	78	57	79	71
May	20	26	41	32	35	28	36	27
June	62	45	76	47	80	50	54	57
2nd Quarter	155	117	188	135	193	135	169	155
July	36	23	52	39	32	47	49	45
August	26	32	36	37	31	34	40	40
September	38	39	60	43	44	51	45	54
3rd Quarter	100	94	148	119	107	132	134	139
October	56	35	78	53	63	35	64	41
November	67	36	91	41	59	49	68	60
December	98	65	70	67	71	77	91	73
4th Quarter	221	136	239	161	193	161	223	174
Total	574	432	691	495	614	508	645	619
Yearly totals	1,006		1,186		1,122		1,264	

No. 1.

Issued 1906 to 1915, Inclusive.

1910		1911		1912		1913		1914		1915	
White	Colored	White	Colored	White	Colored	White	Colored	White	Colored	White	Colored
42	30	52	42	58	36	48	51	24	30	66	42
42	36	53	45	55	32	53	48	48	47	71	55
50	54	37	35	36	59	61	61	39	48	46	45
134	120	142	122	149	127	162	160	111	125	183	142
68	62	84	59	82	85	66	71	102	60	96	91
54	41	35	47	56	50	49	65	55	49	45	46
80	82	72	49	98	79	99	71	95	105	114	90
202	185	191	155	236	214	214	207	252	214	255	227
55	54	51	53	60	65	65	54	53	54	65	55
48	49	58	44	65	59	54	52	60	52	59	59
58	64	60	46	70	84	74	75	79	85	85	78
161	167	169	143	195	208	193	181	192	191	209	192
84	57	90	58	90	50	91	60	105	66	113	66
88	78	87	53	91	84	107	64	103	95	149	91
81	69	101	90	102	125	95	89	106	82	162	127
253	204	278	211	283	259	303	213	314	243	424	284
750	676	780	631	863	808	872	761	869	773	1,071	845
1,426		1,411		1,671		1,633		1,642		1,916	

TABLE No. 2.

Births Reported During 1915, *with Sex and Color.**

MONTH	WHITE		COLORED		TOTAL		GRAND TOTAL
	Male	Female	Ma	Female	Male	Female	
January	83	81	42	44	125	125	250
February	91	95	61	63	152	158	310
March	109	107	56	59	165	166	331
April	101	87	40	38	141	125	266
May	64	82	42	52	106	134	240
June	67	80	53	41	120	121	241
July	110	98	67	61	177	159	336
August	107	107	59	51	166	158	324
September	91	89	64	46	155	135	290
October	93	80	59	43	152	123	275
November	81	87	38	40	119	127	246
December	116	125	60	63	176	188	364
Total	1,113	1,118	641	601	1,754	1,719	3 473

*Still-births are not included in any of the tables of births or deaths.

TABLE No. 2A.

Giving Birth Rate During 1915, *by Color.*

COLOR	POPULATION (Official Estimate U. S. Bureau of the Census)	NUMBER OF BIRTHS			BIRTH RATE PER 1,000 INHABITANTS
		Male	Female	Total	
White	98,018	1,113	1,118	2.231	22.76
Colored	56,656	641	601	1.242	21.92
Total	154,674	1,754	1,719	3,473	22.45

TABLE No. 3.

Attendants at Birth.

BY WHOM REPORTED	WHITE		COLORED		TOTAL		GRAND TOTAL
	Male	Female	Male	Female	Male	Female	
Physician	933	924	224	209	1,157	1,133	2,290
Midwife	180	194	417	392	597	586	1,183
Total	1,113	1,118	641	601	1,754	1 719	3,473

TABLE No. 4.

Stillbirths by Months.

MONTH	White	Colored	Unknown Color	Total
January	8	11	0	19
February	4	20	0	24
March	10	17	0	27
April	7	22	0	29
May	5	26	1	32
June	5	22	0	27
July	12	24	0	36
August	10	11	0	21
September	4	11	0	15
October	9	13	0	22
November	8	10	0	18
December	10	18	0	28
Total	92	205	1	298

TABLE No. 5.

Stillbirths by Years, Since 1906.

YEAR	White	Colored	Unknown Color	Total
1906	70	130	0	200
1907	90	169	0	259
1908	109	165	0	274
1909	76	195	0	271
1910	95	189	0	284
1911	87	186	0	273
1912	111	192	0	303
1913	85	185	0	270
1914	106	181	5	292
1915	92	205	1	298

TABLE No. 6.

Cases Examined by Coroner and Assistant Coroner.

SEX	White	Colored	Unknown Color	Total
Male	118	164	1	283
Female	50	123	1	174
Unknown Sex	0	0	1	1
Total	168	287	3	458

Fetuses Viewed by Coroner.

SEX	White	Colored	Unknown Color	Total
Male	1	1	2	4
Female	2	2	1	5
Unknown Sex	0	0	2	2
Total	3	3	5	11

Stillbirths Viewed by Coroner.

SEX	White	Colored	Unknown Color	Total
Male	2	20	1	23
Female	1	16	1	18
Unknown Sex	0	0	1	1
Total	3	36	3	42

TABLE No. 7.

*Deaths for the Year Ending December 31, 1915, Classified by Color and Sex, and Whether Residents or Nonresidents of Richmond.**

SEX	RESIDENTS OF RICHMOND			NONRESIDENTS OF RICHMOND			TOTAL NUMBER OF DEATHS, INCLUDING NONRESIDENTS		
	White	Col'd	Total	White	Col'd	Total	White	Col'd	Total
Male	700	625	1,325	147	42	189	847	667	1,514
Female	670	659	1,329	59	20	79	729	679	1,408
Total	1,370	1,284	2,654	206	62	268	1,576	1,346	2,922

***Stillbirths are not included in any of the tables of births or deaths.**

TABLE No. 8.

Giving Death Rate, with Nonresidents Included and Excluded.

COLOR	POPULATION (U. S. Bureau of the Census).	ACTUAL NUMBER OF DEATHS		DEATH RATE PER 1,000	
		Non-residents Included	Non-residents Excluded	Non-residents Included	Non-residents Excluded
White	98,018	1,576	1,370	16.08	13.98
Colored	56,656	1,346	1,284	23.76	22.66
Total	154,674	2,922	2 654	18.89	17.16

TABLE No. 9.

Population of Richmond, Virginia, 1870-1916.

(Official Estimates of the U. S. Bureau of the Census.)

YEAR	White	Col'd	Total	YEAR	White	Col'd	Total
1870*	27,928	23.110	51,038	1895	50,914	32 304	83 218
1871	28,712	23,582	52,294	1896	51,290	32 294	83.584
1872	29 496	24 054	53 550	1897	51.666	32 284	83,950
1873	30,280	24,526	54,806	1898	52 042	32.274	84,316
1874	31,064	24,998	56,062	1899	52 418	32,264	84,682
1875	31.846	25,470	57,313	1900†	52,879	32 285	85,164
1876	32,632	25 942	58 574	1901	53,850	32,690	86,540
1877	33,416	26,414	59,830	1902	54 821	33,095	87.916
1878	34.200	26.886	61,086	1903	55,792	33,500	89,292
1879	34,984	27,358	62,342	1904	56,763	33,905	90,668
1880*	35,765	27,835	63 600	1905	57.734	34 310	92,044
1881	37,092	28,287	65,379	1906	58.706	34,715	93 421
1882	38 419	28,739	67,158	1907†	70,429	42 984	113,413
1883	39,746	29.191	68,937	1908	71.401	43.389	114,790
1884	41,073	29,643	70,716	1909	72,373	43,794	116,167
1885	42,400	30.095	72,495	1910 ‡	81.108	46,881	127.989
1886	43 727	30,547	74,274	1911	82,205	47,516	129,721
1887	45,054	30,999	76,053	1912	83.303	48,150	131 453
1888	46.381	31,451	77,832	1913	84 401	48,784	133,185
1889	47,708	31,903	79,611	1914	85,498	49 419	134,917
1890*	49.034	32.354	81,388	1915	98,018	56,656	154 674
1891	49 410	32,344	81,754	1916	99,294	57,393	156 687
1892	49,786	32,334	82,120				
1893	50,162	32 324	82.486				
1894	50,538	32,314	82,852				

*Census year.

†The population given for the Census years 1900 and 1910 are midyear (July 1st) estimates. The actual Census of 1900 gave a population of 85,050; that of 1910, a population of 127.628 as of June 1st and April 15th, respectively. The midyear estimates for these years will be used by the Census Bureau in calculating its official vital statistics rates for these two census years.

‡Annexation added a population of 18,615 on December 6, 1906, and a population of 10,370 on April 15, 1910.

The estimates of population for 1911, 1912 and 1913, differ from those published in previous reports. The figures in the above table are more recent estimates made by the U S. Bureau of the Census.

TABLE No. 10.

Civil Condition of Decedents.

CIVIL CONDITION	WHITE		COLORED		TOTAL
	Male	Female	Male	Female	
Single	368	240	346	291	1,245
Married	364	234	238	189	1 025
Widowed	107	251	71	196	625
Divorced	3	4	1	2	10
Unknown	5	0	11	1	17
Total	847	729	667	679	2,922

TABLE No. 11.

Nativity of Decedents.

NATIVITY	WHITE		COLORED		TOTAL
	Male	Female	Male	Female	
Virginia	650	583	580	613	2,426
Other parts of the United States	108	76	60	46	290
Australia	1	0	0	0	1
Austria	1	1	0	0	2
Brazil	1	0	0	0	1
Canada	1	2	0	0	3
Denmark	1	0	0	0	1
England	11	9	0	1	21
France	1	1	0	0	2
Finland	1	0	0	0	1
Germany	20	13	0	0	33
Ireland	5	16	0	0	21
Italy	5	3	0	0	8
Mexico	1	0	0	0	1
Nova Scotia	1	0	0	0	1
Norway	1	0	0	0	1
Poland	2	1	0	0	3
Prussia	1	1	0	0	2
Russia	6	4	0	0	10
Scotland	3	1	0	0	4
Sweden	2	0	0	0	2
Syria	2	0	0	0	2
Turkey	2	0	0	0	2
Unknown	20	18	27	19	84
Total	847	729	667	679	2,922

TABLE No. 13.

By Whom Certified.

BY WHOM CERTIFIED	WHITE		COLORED		TOTAL
	Male	Female	Male	Female	
Physician	729	679	501	555	2,464
Coroner	118	50	166	124	458
Total	847	729	667	679	2 922

TABLE No. 14.

Giving Mortality for Each Month of the Year, and the Relative Mortality of Each Month Reduced to a Standard of 100.

MONTH	WHITE		COLORED		TOTAL	Relative Mortality*
	Male	Female	Males	Female		
January	67	68	63	83	281	113
February	87	62	46	69	264	118
March	91	72	57	63	283	114
April	75	84	61	50	270	112
May	86	47	53	49	233	95
June	62	46	66	57	231	96
July	54	63	62	51	230	93
August	63	45	48	49	205	83
September	57	50	62	45	214	89
October	81	66	57	50	254	102
November	56	51	37	54	198	82
December	68	75	55	59	257	103
Total	847	729	667	679	2,922	

*The relative mortality for each month as calculated in this table takes into account the actual number of days in each month.

TABLE No. 15

Showing the Number of Deaths, Monthly. of the Two Races, from 1906 to 1915, Inclusive.

MONTH	1906		1907		1908		1909		1910		1911		1912		1913		1914		1615	
	White	Colored	White	Colored	White	Colored	White	Colored	White	Colored	White	Colored	White	Colored	White	Colored	White	Colored	White	Colored
January	78	77	117	135	126	142	95	90	163	131	107	114	123	136	120	131	116	148	135	146
February	71	76	105	121	107	128	87	89	124	108	110	88	125	107	145	90	109	110	149	115
March	83	81	117	141	110	113	110	128	113	105	109	140	139	114	126	117	130	138	163	120
April	76	93	112	113	97	90	102	111	108	110	106	100	111	108	110	110	127	120	159	111
May	78	73	106	101	111	107	110	105	123	128	111	119	102	91	105	112	94	113	133	102
June	97	110	128	131	113	127	123	90	143	146	139	111	91	99	131	146	123	124	108	123
July	87	92	115	141	113	106	115	114	129	129	136	137	107	152	115	112	127	112	117	113
August	70	83	89	97	112	93	77	99	91	124	119	101	116	106	101	112	89	97	108	97
September	88	71	97	90	91	75	73	82	116	98	93	105	117	113	98	100	92	93	107	107
October	79	91	102	113	92	78	97	107	95	113	112	117	111	108	122	84	87	104	147	107
November	73	82	76	79	91	82	100	98	116	115	118	110	98	110	101	102	106	96	107	91
December	111	88	125	101	99	83	111	91	150	109	117	99	132	99	137	91	96	107	145	114
Total	991	1,017	1 289	1,363	1,262	1 224	1,200	1.204	1.471	1,416	1,377	1,341	1 372	1,343	1,411	1,307	1 296	1,362	1,576	1,346
Grand total	2,008*		2,652*		2,486*		2,404*		2 887*		2,718*		2,715*		2,718*		2,658*		2,922*	

*Nonresidents (178 in 1906; 155 in 1907; 167 in 1908; 219 in 1909; 331 in 1910; 267 in 1911; 290 in 1912; 297 in 1913; 256 in 1914, and 268 in 1015).

Eliminating these, as in previous years, the total deaths were 1,980 in 1906; 2,497 in 1907; 2,319 in 1908; 2,185 in 1909; 2,556 in 1910; 2,451 in 1911: 2,425 in 1912; 2,421 in 1913; 2,402 in 1914, and 2,654 in 1915.

TABLE No. 16.

Deaths for the Year Ending December 31, 1915—Classified by Causes, Months, Color and Sex.

CAUSES OF DEATH	MONTHS												WHITE			COLORED			Grand Total
	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Male	Female	Total	Male	Female	Total	
I.—GENERAL DISEASES																			
1. Typhoid fever	......	......	......	......	......	......	5	3	5	5	......	1	5	1	6	10	3	13	19
4. Malaria	......	......	......	......	......	......	......	1	......	......	......	......	0	0	0	1	......	1	1
7. Scarlet fever	......	......	......	......	1	......	......	......	......	......	......	......	0	1	1	0	0	0	1
8. Whooping cough	1	......	2	2	......	......	......	3	1	......	......	1	0	0	0	3	7	10	10
9. Diphtheria and croup	1	......	......	1	......	......	......	......	......	2	2	......	3	2	5	1	0	1	6
10. Influenza	3	5	13	7	1	1	......	......	......	1	......	5	5	14	19	8	9	17	36
14 Dysentery	1	......	......	1	......	4	2	2	1	1	......	1	1	2	3	2	8	10	13
18. Erysipelas	......	2	1	1	......	......	1	......	......	......	......	......	4	1	5	0	0	0	5
20 Purulent infection and septicemia	......	......	4	3	5	3	......	......	1	2	......	......	6	9	15	2	1	3	18
24. Tetanus	1	......	......	1	......	......	3	......	1	1	......	......	3	0	8	4	0	4	7
26. Pellagra	1	1	2	1	2	1	4	4	3	5	......	1	7	13	20	1	4	5	25
28. Tuberculosis of the lungs	19	20	31	23	24	21	22	19	20	16	23	25	60	48	108	63	92	155	263
29. Acute miliary tuberculosis	2	2	1	......	1	......	2	1	......	1	1	1	2	1	3	3	6	9	12
30. Tuberculous meningitis	3	3	3	2	2	......	1	2	2	3	2	2	7	7	14	6	5	11	25
31. Abdominal tuberculosis	3	2	......	1	2	1	3	2	......	3	2	2	3	6	9	4	8	12	21
32. Pott's disease	......	......	......	1	......	......	......	......	......	......	1	1	2	0	2	0	1	1	3
33. White swelling	......	......	......	......	......	1	......	......	......	......	......	......	0	0	0	1	0	1	1
34. Tuberculosis of other organs	......	1	......	......	......	......	......	2	......	......	......	......	0	1	1	1	1	2	3
35. Disseminated tuberculosis	......	......	......	......	......	1	......	......	......	......	......	......	1	0	1	0	0	0	1
36. Rickets	......	......	1	......	......	......	2	......	1	......	......	......	0	0	0	3	1	4	4
37. Syphilis	......	1	1	3	2	5	4	2	4	3	3	4	6	8	14	11	7	18	32
39. Cancer of the buccal cavity	1	1	......	......	......	1	......	1	......	......	......	......	3	0	3	0	1	1	4
40. Cancer of the stomach and liver	1	7	6	1	4	3	1	......	2	6	3	4	15	15	30	2	6	8	38
41. Cancer of the peritoneum, intestines, rectum	1	......	......	2	1	2	......	1	2	4	......	1	8	4	12	1	1	2	14
42. Cancer of the female genital organs	3	3	1	4	1	4	2	3	2	......	2	2	0	19	19	0	8	8	27
43. Cancer of the breast	3	......	2	1	......	......	2	1	......	......	......	2	0	10	10	0	1	1	11
44. Cancer of the skin	......	1	1	......	2	1	......	......	......	2	1	1	6	3	9	0	0	0	9
45. Cancer of other or unspecified organs	1	......	3	......	2	1	1	2	2	5	2	2	11	5	16	2	3	5	21
47. Acute articular rheumatism	1	......	......	......	2	2	1	......	......	2	......	2	3	3	6	2	2	4	10
48. Chronic rheumatism and gout	1	1	......	1	......	......	......	1	......	......	......	......	1	1	2	0	2	2	4

49. Scurvy	....	1	....	....	....	....	....	....	....	....	....	....	0	0	0	0	1	1	1
50. Diabetes	1	....	4	1	2	....	3	....	2	5	3	1	6	9	15	3	4	7	22
51. Exophthalmic goitre	....	....	....	2	1	1	1	....	....	2	1	....	0	7	7	0	1	1	8
53. Leuchaemia	1	1	....	....	....	....	....	....	....	1	....	....	2	0	2	1	0	1	3
54. Anemia, chlorosis	2	....	2	1	2	2	....	1	....	1	....	3	4	7	11	1	2	3	14
56. Alcoholism (acute or chronic)	1	....	....	....	1	2	....	....	1	2	....	1	5	1	6	2	0	2	8
59. Other chronic poisonings	....	....	....	1	....	....	....	1	....	1	....	1	2	2	4	0	0	0	4
II.—DISEASES OF THE NERVOUS SYSTEM																			
60. Encephalitis	....	....	....	....	....	....	....	....	....	....	....	1	0	0	0	1	0	1	1
61. Simple meningitis	3	1	....	1	2	1	3	2	....	2	....	2	7	6	13	2	2	4	17
62. Locomotor ataxia	....	....	....	2	1	1	1	1	....	1	1	1	7	1	8	1	0	1	9
63. Other diseases of the spinal cord	1	1	....	....	....	1	....	1	....	3	....	2	2	2	4	4	1	5	9
64. Cerebral hemorrhage, apoplexy	21	15	16	24	20	16	11	13	17	18	17	13	55	56	111	40	50	99	201
65 Softening of the brain	1	....	....	1	2	1	....	....	1	....	2	....	4	3	7	0	1	1	8
66. Paralysis without specified cause	1	3	3	1	....	....	....	1	1	2	1	1	6	1	7	4	3	7	14
67. General paralysis of the insane	....	1	....	....	....	....	....	....	....	....	....	....	0	1	1	0	0	0	1
68. Other forms of mental alienation	....	1	1	1	....	....	....	....	....	....	....	....	2	1	3	0	0	0	3
69. Epilepsy	....	2	....	....	....	2	1	....	....	....	....	1	1	1	2	3	1	4	6
70. Convulsions (nonpuerperal)	....	....	....	....	....	....	....	1	....	....	....	....	0	1	1	0	0	0	1
71. Convulsions of infants	2	2	3	3	2	1	....	1	3	1	....	....	4	0	4	10	4	14	18
73. Hysteria	....	....	....	....	....	....	....	....	....	1	....	....	0	1	1	0	0	0	1
74. Other diseases of the nervous system	2	3	2	2	1	....	1	2	....	3	....	....	8	3	11	3	2	5	16
75. Diseases of the adnexa	....	....	....	....	....	....	1	....	....	....	....	....	0	1	1	0	0	0	1
76. Diseases of the ears	....	2	....	....	1	....	1	....	....	....	1	....	3	2	5	0	0	0	5
III.—DISEASES OF THE CIRCULATORY SYSTEM																			
77. Pericarditis	....	1	....	1	....	....	....	....	....	....	....	....	0	1	1	1	0	1	2
78. Acute endocarditis	3	1	1	1	1	3	2	....	3	1	1	4	4	2	6	5	10	15	21
79. Organic diseases of the heart	44	33	32	24	18	19	17	19	14	25	29	36	93	86	179	71	60	131	310
80. Angina pectoris	....	2	2	2	1	1	....	....	....	....	1	....	7	1	8	0	1	1	9
81. Diseases of the arteries, atheroma, aneurysm, etc	1	3	3	1	1	3	4	1	2	7	1	2	11	7	18	5	6	11	29
82. Embolism and thrombosis	....	2	....	....	....	2	....	....	....	....	2	....	4	1	5	0	1	1	6
84. Diseases of the lymphatic system	....	....	....	....	1	....	....	....	1	....	....	....	2	0	2	0	0	0	2
IV.—DISEASES OF THE RESPIRATORY SYSTEM																			
86. Diseases of the nasal fossae	1	....	....	....	....	....	....	....	....	....	....	....	0	0	0	0	1	1	1
87. Diseases of the larynx	....	....	....	....	1	....	....	....	....	....	1	....	0	0	0	2	0	2	2
88. Diseases of the thyreoid body	....	....	....	....	1	....	....	....	....	....	....	....	0	1	1	0	0	0	1
89. Acute bronchitis	3	5	5	2	2	2	....	....	1	1	1	1	2	3	5	8	10	18	23
90. Chronic bronchitis	....	1	2	3	....	1	....	2	....	....	1	....	5	1	6	2	2	4	10
91. Bronchopneumonia	23	15	5	14	2	9	5	2	4	6	7	16	22	16	38	32	38	70	108
92. Pneumonia	21	25	33	30	14	3	4	3	3	6	14	32	38	40	78	60	50	110	188
93. Pleurisy	....	....	....	1	....	1	1	1	....	....	2	1	2	0	2	2	3	5	7

TABLE No. 16—CONTINUED.

CAUSES OF DEATH	MONTHS												WHITE			COLORED			Grand Total
	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Male	Female	Total	Male	Female	Total	
DISEASES OF THE RESPIRATORY SYSTEM—CONTINUED																			
94. Pulmonary congestion, pulmonary apoplexy	2	1	3	4	4	4	1	3	1	1	1	6	7	5	12	10	9	19	31
95. Gangrene of the lung	......	......	......	......	......	......	......	......	......	......	1	......	1	0	1	0	0	0	1
96. Asthma	......	......	1	......	1	2	......	......	1	......	......	......	2	0	2	1	2	3	5
97. Pulmonary emphysema	1	......	1	......	1	......	......	......	......	......	......	......	1	0	1	1	1	2	3
98. Other respiratory diseases (tuberculosis excepted)	4	1	......	1	1	......	......	1	......	2	2	......	2	2	4	4	4	8	12
V.—DISEASES OF THE DIGESTIVE SYSTEM																			
99. Diseases of the mouth and adnexa	......	......	......	......	......	1	......	......	......	......	......	......	0	0	0	0	1	1	1
100. Diseases of the pharynx	......	......	......	......	......	......	......	1	......	......	......	......	0	0	0	1	0	1	1
102. Ulcer of the stomach	......	......	1	......	1	......	......	......	......	2	......	......	1	1	2	0	2	2	4
103. Other diseases of the stomach (cancer excepted)	3	6	1	1	4	2	7	3	5	4	1	......	8	3	11	10	16	26	37
104. Diarrhea and enteritis (under 2 years)	......	1	4	......	6	21	28	17	12	8	3	1	29	24	53	32	16	48	101
105. Diarrhea and enteritis (2 years and over)	3	1	2	3	4	2	5	5	3	3	......	......	16	10	26	4	3	7	33
108. Appendicitis and typhlitis	3	2	3	4	2	5	2	2	3	5	4	2	10	16	26	6	5	11	37
109. Hernias, intestinal obstructions	2	2	2	4	1	3	3	1	1	2	3	4	9	9	18	8	2	10	28
110. Other diseases of the intestine	......	......	......	1	2	1	......	......	......	1	......	2	2	3	5	1	1	2	7
113. Cirrhosis of the liver	5	1	1	1	3	1	1	1	2	1	3	2	7	2	9	8	5	13	22
114. Biliary Calculi	......	......	1	1	......	1	1	......	......	2	......	1	2	4	6	0	1	1	7
115. Other diseases of the liver	......	1	1	2	......	1	......	1	2	4	......	......	3	7	10	1	1	2	12
117. Simple peritonitis (nonpuerperal	......	......	......	1	......	2	......	2	......	......	......	......	2	1	3	1	1	2	5
118. Other digestive diseases (except cancer, tuberculosis)	......	......	1	......	......	......	......	......	......	......	......	......	0	1	1	0	0	0	1

VI.—DISEASES OF THE GENITO-URINARY SYSTEM																			
119. Acute nephritis	6	4	5	7	5	4	3	5	6	2	......	1	8	8	16	13	19	32	48
120. Bright's disease	31	27	24	21	31	22	17	12	19	16	19	17	99	73	172	39	45	84	256
122. Other diseases of the kidneys and adnexa	......	......	......	......	......	1	1	......	1	......	......	1	2	2	4	0	0	0	4
123. Calculi of the urinary passages	......	......	1	......	......	1	......	......	......	......	......	......	1	1	2	0	0	0	2
124. Diseases of the bladder	......	......	......	......	......	......	......	......	......	2	......	1	2	0	2	1	0	1	3
126. Diseases of the prostate	1	1	......	1	4	......	......	......	1	......	1	......	7	0	7	2	0	2	9
129. Uterine tumor (noncancerous)	......	......	1	......	1	1	1	......	1	1	......	1	0	3	3	0	4	4	7
130. Diseases of the uterus	......	......	......	......	......	......	1	......	......	......	......	......	0	1	1	0	0	0	1
131. Cysts and other tumors of the ovary	......	......	......	1	......	......	......	......	......	......	......	......	0	0	0	0	1	1	1
132. Other (nonvenereal) diseases of female genital organs	......	1	1	......	......	2	1	1	1	......	1	......	0	4	4	0	4	4	8
VII.—THE PUERPERAL STATE																			
134 Accidents of pregnancy	......	......	......	......	1	......	......	......	......	......	......	......	0	1	1	0	0	0	1
135. Puerperal hemorrhage	......	1	......	1	......	......	......	......	1	......	......	1	0	2	2	0	2	2	4
136. Other accidents of labor	......	......	1	......	......	1	1	......	......	1	......	1	0	2	2	0	3	3	5
137. Puerperal septicemia	......	......	1	......	2	1	2	1	1	2	......	......	0	3	3	0	7	7	10
138. Puerperal albuminuria and convulsions	......	1	......	2	1	......	......	......	1	......	2	2	0	8	8	0	1	1	9
VIII.—DISEASES OF THE SKIN																			
142. Gangrene	......	......	1	......	......	2	......	......	......	......	......	......	1	0	1	1	1	2	3
144. Acute abscess	......	......	1	......	......	......	......	1	......	......	......	......	1	0	1	1	0	1	2
145. Other diseases of the skin and adnexa	......	......	......	......	......	......	......	......	......	1	......	......	0	1	1	0	0	0	1
IX.—DISEASES OF THE ORGANS OF LOCOMOTION																			
146. Diseases of the bones (tuberculosis excepted)	......	......	......	......	1	......	......	......	......	......	1	1	1	1	2	1	0	1	3
X.—MALFORMATIONS																			
150. Congenital malformations (stillbirths not included)	1	2	2	......	2	......	1	1	1	......	1	2	5	5	10	2	1	3	13
XI.—DISEASES OF EARLY INFANCY																			
151. Congenital debility, icterus and sclerema	15	16	18	14	8	7	16	16	23	12	10	6	54	35	89	35	37	72	161

TABLE No. 16—CONTINUED.

CAUSES OF DEATH	MONTHS												WHITE			COLORED			Grand Total
	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Male	Female	Total	Male	Female	Total	
DISEASES OF EARLY INFANCY—CONTINUED																			
152. Other diseases peculiar to early infancy	3	2	3	2	1	......	3	......	3	3	2	2	12	5	17	4	3	7	24
153. Lack of care	......	......	......	......	......	......	......	......	......	2	......	......	0	0	0	1	1	2	2
XII.—OLD AGE																			
154. Senility	2	2	3	......	1	......	2	3	......	......	1	2	1	10	11	3	2	5	16
XIII.—EXTERNAL CAUSES																			
155. Suicide by poison	1	......	......	......	......	2	1	1	......	......	......	......	3	2	5	0	0	0	5
156. Suicide by asphyxia	......	......	1	......	......	......	......	1	......	......	......	......	2	0	2	0	0	0	2
158. Suicide by drowning	......	......	......	......	......	......	......	......	......	......	......	1	0	0	0	1	0	1	1
159. Suicide by firearms	2	......	......	1	1	1	2	1	......	......	......	......	4	2	6	2	0	2	8
160. Suicide by cutting or piercing instruments	......	1	......	......	......	......	......	......	......	......	......	......	1	0	1	0	0	0	1
161 Suicide by jumping from a high place	......	......	......	......	......	1	......	......	......	......	......	......	1	0	1	0	0	0	1
163. Other suicides	......	......	......	......	......	......	1	......	......	......	......	......	0	0	0	0	1	1	1
164. Poisoning by food	......	......	......	......	......	......	......	......	1	......	......	......	0	1	1	0	0	0	1
165. Other acute poisonings	1	......	......	......	1	......	......	1	1	......	......	......	0	2	2	1	1	2	4
166. Conflagration	......	1	1	......	......	......	......	......	......	3	......	1	3	1	4	1	1	2	6
167. Burns	5	5	1	1	......	......	2	2	......	2	3	3	6	7	13	1	10	11	24
168. Absorption of deleterious gases	......	2	1	......	1	1	......	1	1	1	......	2	1	2	3	5	2	7	10
169. Accidental drowning	......	1	......	......	1	1	2	......	2	......	......	......	2	0	2	5	0	5	7
170. Traumatism by firearms	......	1	......	......	1	1	......	1	1	1	2	1	2	0	2	5	2	7	9
172. Traumatism by fall	1	2	1	1	1	1	6	2	2	3	1	2	9	11	20	1	2	3	23
174. Traumatism by machines	......	......	......	......	......	......	......	1	2	......	......	......	2	0	2	1	0	1	3
175. Traumatism by other crushing	1	3	......	6	4	3	3	5	6	5	3	5	24	0	24	19	1	20	44
179. Effects of heat	......	......	......	......	......	......	1	......	2	......	......	......	0	1	1	2	0	2	3
181. Electricity (lightning excepted)	......	......	......	4	......	......	......	1	......	1	......	......	5	0	5	1	0	1	6
182. Homicide by firearms	2	2	......	......	......	1	1	1	......	......	......	......	0	2	2	3	2	5	7

183. Homicide by cutting or piercing instruments	......	1	1	......	1	......	......	1	......	2	1	1	2	0	2	5	1	6	8
184. Homicide by other means	2	1	2	3	......	1	......	......	1	1	......	1	3	1	4	3	5	8	12
185. Fractures (cause not specified)	......	......	......	......	......	......	......	......	......	1	......	......	0	1	1	0	0	0	1
186. Other external violence	......	......	1	1	......	......	......	......	......	......	......	1	2	0	2	1	0	1	3
186-A. Legal electrocution	1	......	1	1	1	3	......	2	2	......	......	......	1	0	1	10	0	10	11
XIV.—ILL-DEFINED DISEASES																			
187. Ill-defined organic diseases	......	......	......	......	......	......	......	......	1	......	1	......	0	0	0	0	2	2	2
189. Cause of death not specified or ill-defined	4	......	3	5	6	3	2	5	3	4	3	6	8	4	12	15	17	32	44
Total deaths from all causes	281	264	283	270	235	231	230	205	214	254	198	257	847	729	1,576	667	679	1,346	2,922

TABLE No. 17.

Deaths for the Year Ending December 31, 1915, Among Nonresidents.

CAUSES OF DEATH	MONTHS												WHITE			COLORED			Grand Total
	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Male	Female	Total	Male	Female	Total	
I.–GENERAL DISEASES																			
1. Typhoid fever								1	2				2	0	2	1	0	1	3
10. Influenza		1											1	0	1	0	0	0	1
18. Erysipelas			1				1						2	0	2	0	0	0	2
20. Purulent infection and septicemia			1	1	3				1	2			5	2	7	1	0	1	8
26. Pellagra					1			1	1	1			3	1	4	0	0	0	4
28. Tuberculosis of the lungs	1	2			1		1	3		2	2		6	0	6	4	2	6	12
31. Abdominal tuberculosis	1										1		1	0	1	0	1	1	2
32. Pott's disease												1	1	0	1	0	0	0	1
34. Tuberculosis of other organs								2					0	1	1	1	0	1	2
37. Syphilis										1			1	0	1	0	0	0	1
39. Cancer of the buccal cavity						1							1	0	1	0	0	0	1
40. Cancer of the stomach and liver		2	2			2			1	1		1	7	2	9	0	0	0	9
41. Cancer of the peritoneum, intestines, rectum	1			1									2	0	2	0	0	0	2
42. Cancer of the female genital organs	1		1				2						0	2	2	0	2	2	4
43. Cancer of the breast	1											1	0	2	2	0	0	0	2
44. Cancer of the skin			1		1					1			3	0	3	0	0	0	3
45. Cancer of other or unspecified organs			1				1			1	2	2	5	0	5	1	1	2	7
50. Diabetes	1		1				1		1				1	1	2	0	2	2	4
51. Exophthalmic goitre					1					1	1		0	3	3	0	0	0	3
53. Leuchaemia	1									1			2	0	2	0	0	0	2
54. Anaemia, chlorosis					1					1			1	1	2	0	0	0	2
59. Other chronic poisonings								1		1			2	0	2	0	0	0	2

II.—DISEASES OF THE NERVOUS SYSTEM																			
61. Simple meningitis					1					1			1	1	2	0	0	0	2
63. Other diseases of the spinal cord								1				1	1	1	2	0	0	0	2
64. Cerebral hemorrhage, apoplexy				1	1	1		1	2		1	1	6	1	7	1	0	1	8
65. Softening of the brain	1												0	0	0	0	1	1	1
76. Diseases of the ears							1				1		0	2	2	0	0	0	2
III.—DISEASES OF THE CIRCULATORY SYSTEM																			
78. Acute endocarditis		1										1	1	0	1	0	1	1	2
79. Organic diseases of the heart	2	2	3	1	1	1	3	1	3	1		1	11	4	15	3	1	4	19
80. Angina pectoris					1								1	0	1	0	0	0	1
82. Embolism and thrombosis						1					1		1	0	1	0	1	1	2
IV.—DISEASES OF THE RESPIRATORY SYSTEM																			
89. Acute bronchitis					1								0	0	0	1	0	1	1
90. Chronic bronchitis			1										1	0	1	0	0	0	1
91. Bronchopneumonia		1					1				2		2	2	4	0	0	0	4
92. Pneumonia	1		1		1			1			2	1	4	1	5	2	0	2	7
93. Pleurisy							1						0	0	0	1	0	1	1
94. Pulmonary congestion, pulmonary apoplexy	1		2	1		1							2	2	4	1	0	1	5
95. Gangrene of the lung											1		1	0	1	0	0	0	1
98. Other respiratory diseases (tuberculosis excepted)										1			0	0	0	1	0	1	1
V.—DISEASES OF THE DIGESTIVE SYSTEM																			
103. Other diseases of the stomach (cancer excepted)									1				1	0	1	0	0	0	1
104. Diarrhea and enteritis (under 2 years)						1	1						1	0	1	1	0	1	2
105. Diarrhea and enteritis (2 years and over)							1						1	0	1	0	0	0	1
108. Appendicitis and typhlitis	3			2	1	2		1	1	4	4	2	7	8	15	3	2	5	20
109. Hernias, intestinal obstruction	1	1		2	1	2			1			2	5	4	9	1	0	1	10
110. Other diseases of the intestines										1			0	1	1	0	0	0	1
114. Biliary calculi						1				1		1	1	1	2	0	1	1	3
115. Other diseases of the liver				2						1			1	1	2	1	0	1	3
117. Simple peritonitis (nonpuerperal)						1		1					2	0	2	0	0	0	2

TABLE No. 17—CONTINUED.

CAUSES OF DEATH	MONTHS												WHITE			COLOURED			Grand Total
	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Male	Female	Total	Male	Female	Total	
VI.—DISEASES OF THE GENITO-URINARY SYSTEM																			
120 Bright's disease	1	1	3	1	3	2	1	1	.....	.....	1	2	13	3	16	0	0	0	16
122. Other diseases of the kidneys and adnexa	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	0	1	1	0	0	0	1
123 Calculi of the urinary passages	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	1	0	1	0	0	0	1
124. Diseases of the bladder	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	.....	2	0	2	0	0	0	2
126. Diseases of the prostate	.....	.....	.....	.....	3	.....	.....	.....	1	.....	1	.....	5	0	5	0	0	0	5
129. Uterine tumor (noncancerous)	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	0	1	1	0	0	0	1
VII.—THE PUERPERAL STATE																			
135. Puerperal hemorrhage	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	0	1	1	0	0	0	1
137. Puerperal septicemia	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	0	1	1	0	0	0	1
138. Puerperal albuminuria and convulsions	.....	1	.....	1	.....	.....	.....	.....	.....	.....	1	.....	0	3	3	0	0	0	3
VIII.—DISEASES OF THE SKIN																			
142. Gangrene	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	0	0	0	1	0	1	1
IX.—DISEASES OF THE ORGANS OF LOCOMOTION																			
246. Diseases of the bones (tuberculosis excepted)	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	1	1	1	2	0	0	0	2

X.—MALFORMATIONS																		
150. Congenital malformations (stillbirths not included)									1				1	0	1	0	0	0	1
XI.—DISEASES OF EARLY INFANCY																			
151. Congenital debility, icterus, and sclerema		2						1	1				3	1	4	0	0	0	4
XIII.—EXTERNAL CAUSES																			
159. Suicide by firearms	1												1	0	1	0	0	0	1
167. Burns	1							1		1	2	1	2	2	4	0	2	2	6
170. Traumatism by firearms		1						1	1	1			1	0	1	2	1	3	4
172. Traumatism by fall		1				1		1	1	1			3	1	4	0	1	1	5
174. Traumatism by machines								1					1	0	1	0	0	0	1
175. Traumatism by other crushing	1			2	1			2	2	3	1	1	9	0	9	4	0	4	13
176. Injuries by animals				1									1	0	1	0	0	0	1
181. Electricity (lightning excepted)				2									2	0	2	0	0	0	2
182. Homicide by firearms		1											0	0	0	0	1	1	1
184. Homicide by other means				1									1	0	1	0	0	0	1
186. Other external violence			1										1	0	1	0	0	0	1
186-A. Legal electrocution	1		1	1	1	3		2	2				1	0	1	10	0	10	11
XIV.—ILL-DEFINED DISEASES																			
189. Cause of death not specified or ill-defined										1		1	1	0	1	1	0	1	2
Total deaths from all causes among nonresidents	21	17	21	21	26	22	15	24	24	32	24	21	147	59	206	42	20	62	268

TABLE No. 18.

Deaths of Infants Under One Year Occurring in Richmond, Virginia, During the Year 1915, Classified by Age at Death, Month, Color, Sex, and Cause of Death.

1915	Under 1 Day	2nd Day	3rd Day	4th Day	5th Day	6th Day	7th Day	8th Day	9th Day	10th Day	11th Day	12th Day	13th Day	14th Day	3-4 Wks.	1-3 Mos.	3-6 Mos.	6-12 Mos.	Total
January	12			3		2		1	1	1				1	3	4	6	3	37
February	7	2	1	1	1					1		1			4	7	5	5	35
March	13	1		1			1				3	1			1	8	6	9	44
April	5	1	1					2		1		1		1	1	2	3	8	26
May	3		1	1				1	1		2		1		1	4	5	6	26
June	1	1		1			1						1		3	4	17	16	45
July	4	1			1		1		1				1		5	7	14	15	50
August	1	1	3	2		1									2	9	8	15	42
September	10	3	3	3			2	1					1		1	5	12	11	52
October	6	2	2					2							4	8	3	6	33
November	2	2				1									2	8	1	5	21
December	3	2	3			1	1			1	1				2	7	4	6	31
White	39	7	6	5	1	4	3	1	1	2	3	3	2	2	13	37	33	53	215
Colored	28	9	8	7	1	1	3	6	2	2	3	0	2	0	16	36	51	52	227
Male	40	13	4	10	1	2	2	6	1	3	4	0	4	1	14	41	48	64	258
Female	27	3	10	2	1	3	4	1	2	1	2	3	0	1	15	32	36	41	184
8. Whooping cough																1		2	3
14. Dysentery				1													2	1	4
20. Purulent infection and septicemia																		2	2
24. Tetanus								1	1				1						3
28. Tuberculosis of the lungs																		2	2
30. Tuberculous meningitis																	1	3	4
31. Abdominal tuberculosis																1		2	3
36. Rickets																	2	1	3
37. Syphilis			2										1		1	8			12
45. Cancer of organs not specified																		1	1
61. Simple meningitis																1	1		2
63. Other diseases of the spinal cord															1				1
69. Epilepsy																	1		1
71. Convulsions of infants	1	1		1				1					1		1	2	3	3	14

74. Other diseases of the nervous system																	1	1	2
76. Diseases of the ear																	1		1
78. Acute endocarditis																	1		1
84. Diseases of the lymphatic system																	1	1	2
86. Diseases of nasal fossae																	1		1
87. Diseases of larynx																		1	1
89. Acute bronchitis										1						3	2	4	10
91. Bronchopneumonia		1		1		1	2	1							2	6	12	10	36
92. Lobar pneumonia															1	5	2	6	14
94. Pulmonary congestion, pulmonary apoplexy		1														1		1	3
99. Diseases of the mouth and adnexa															1				1
103. Other diseases of the stomach (cancer excepted)								1								4	2	3	10
104. Diarrhea and enteritis (under 2 years)															6	10	29	37	82
109. Hernia, intestinal obstruction																	1		1
110. Other diseases of the intestines																1		2	3
119. Acute nephritis																		1	1
144. Acute abscess																1			1
145. Other diseases of the skin and adnexa															1				1
150. Congenital malformations	1			2	1		1				2	1			1		2		11
151. Congenital debility, icterus and sclerema	42	10	11	6		2	3	3	2	3	2	1	1	2	14	23	17	19	161
152. Other causes peculiar to early infancy	13	2	1		1	1					2	1				2			23
153. Lack of care	2																		2
168. Absorption of deleterious gases		1														1	1		3
184. Homicide by other means (infanticide)	8																		8
189. Causes of death not specified or ill-defined				1		1										3	1	2	8
Total	67	16	14	12	2	5	6	7	3	4	6	3	4	2	29	73	84	105	442

TABLE No. 19.

Giving Death Rate and Per Cent. of Deaths from Different Causes.

CAUSES OF DEATH	ACTUAL NUMBER OF DEATHS			DEATH RATE PER 1,000 LIVING			PER CENT. OF TOTAL MORTALITY		
	White	Colored	Total	White	Colored	Total	White	Colored	Total
I General Diseases	381	323	704	3.89	5.70	4.55	24.18	24.00	24.10
II. Diseases of the nervous system and organs of special sense	179	132	311	1.83	2.33	2.01	11.35	9.81	10.65
III. Diseases of the circulatory system	219	160	379	2.24	2.83	2.45	13.89	11.88	12.97
IV. Diseases of the respiratory system	150	242	392	1.53	4.27	2.54	9.52	17.98	13 41
V. Diseases of the digestive system	170	126	296	1.74	2.22	1.91	10.78	9.36	10.15
VI. Diseases of the genito-urinary system and its adnexa	211	128	339	2.15	2.26	2.19	13.38	9 51	11.60
VII. The puerperal state	16	13	29	.16	.23	.19	1.01	.97	.99
VIII. Diseases of the skin and cellular tissue	3	3	6	.03	.05	.04	.19	.22	.20
IX. Diseases of the organs of locomotion	2	1	3	..02	.02	.02	.13	.07	.10
X. Malformations	10	3	13	.10	.05	.08	.63	.22	.44
XI. Early infancy	106	81	187	1.08	1.43	1.21	6.72	6.02	6.40
XII. Old age	11	5	16	.11	.09	.10	.74	.37	.55
XIII. External causes	106	95	201	1.08	1.68	1.30	6..72	7.06	6.87
XIV. Ill-defined diseases	12	34	46	.12	.60	.30	.76	2.53	1.57
Total deaths from all causes	1,576	1,346	2,922	16.08	23.76	18.89	100.00	100.00	100.00

TABLE No. 20.

Giving Death Rate and Per Cent. of Deaths at Different Age Periods.

AGE PERIODS	Actual Number of Deaths			Death Rate Per 1,000 Living at All Ages			Per Cent. of Total Mortality		
	White	Colored	Total	White	Colored	Total	White	Colored	Total
Less than 1 day	37	29	66	.38	.51	.43	2.35	2.15	2.26
Between 1 day and 1 week	26	29	55	.26	.51	.35	1.65	2.15	1.85
First week	63	58	121	.64	1.02	.78	4.00	4.30	4.14
2d, 3d and 4th weeks	28	31	59	.29	.55	.38	1.78	2.31	2.02
First month	91	89	180	.93	1.57	1.16	5.78	6.61	6.16
1 to 3 months	37	37	74	.38	.65	.48	2.35	2.75	2.53
3 to 6 months	33	50	83	.34	.88	.54	2.09	3.71	2.84
6 to 12 months	54	51	105	.55	.90	.68	3.42	3.79	3.59
First year	215	227	442	2.20	4.00	2.86	13.64	16.86	15.12
Second year	40	56	96	.41	.99	.62	2.54	4.16	3.28
Third year	14	23	37	.14	.41	.24	.89	1.71	1.27
Fourth year	8	15	23	.08	.26	.15	.50	1.12	.79
Fifth year	13	8	21	.13	.14	.14	.83	.59	.72
Total under 5 years	290	329	619	2.96	5.80	4.01	18.40	24.44	21.18
5 to 10 years	29	26	55	.30	.46	.35	1.84	1.93	1.88
10 to 15 years	11	19	30	11	.34	.19	.70	1.41	1.03
15 to 20 years	28	50	78	.29	.88	.50	1.78	3.71	2.67
20 to 25 years	58	101	159	.59	1.78	1.03	3.68	7.50	5.44
25 to 30 years	55	96	151	.56	1.69	.98	3.49	7 13	5.16
30 to 35 years	74	100	174	.76	1.77	1.13	4.69	7.43	5.97
35 to 40 years	67	105	172	.68	1.85	1.11	4.25	7.80	5.88
40 to 45 years	70	97	167	.71	1.71	1.08	4.44	7.21	5.71
45 to 50 years	78	83	161	.80	1.47	1.04	4.95	6.18	5 51
50 to 55 years	104	98	202	1.06	1.73	1.31	6.60	7.28	6.92
55 to 60 years	126	80	206	1.29	1.41	1.33	8.00	5.94	7.05
60 to 65 years	108	59	167	1.10	1 04	1.08	6.85	4.38	5.71
65 to 70 years	131	49	180	1.34	.87	1 16	8.32	3 64	6.16
70 to 75 years	139	25	164	1.42	.44	1.06	8.82	1.86	5.61
75 to 80 years	104	9	113	1.06	.16	.73	6.60	.67	3.87
80 to 85 years	69	11	80	.70	.19	.52	4 37	.82	2.74
85 to 90 years	26	4	30	.26	.07	.19	1.65	.30	1 03
90 to 95 years	7	2	9	.07	.04	.06	.44	.15	.31
95 to 100 years	2	1	3	.02	.02	.02	.13	.07	.10
Over 100 years	0	2	2	......	.04	.01	....	.15	.07
Total	1,576	1 346	2,922	16.08	23.76	18.89	100.00	100.00	100.00

TABLE No. 21.

Showing the Number of Nonresidents Buried Here and Their Color.

NONRESIDENTS	White	Colored	Total
	299	80	379

Showing the Number of Persons Who Died Here and Were Buried Elsewhere and Their Color.

TRANSIT PERMITS GRANTED	White	Colored	Total
	304	221	525

TABLE No. 22.

Showing the Number of Typhoid Fever Cases Reported to the Health Department, and the Number of Deaths for Each Month in 1915.

MONTH	Cases on hand at beginning of month.	Cases Reported in Month			Total under Treatment	Deaths in Month			Recoveries in Month.	Total Discharges.	Cases on Hand at end of Month
		White	Colored	Total		White	Colored	Total			
January	9	8	....	8	17	......	......	......	15	15	2
February.....	2	2	....	2	4	......	......	......	2	2	2
March	2	1	....	1	3	......	......	......	2	2	1
April	1	....	1	1	2	......	......	......	1	1	1
May...........	1	5	....	5	6	......	......	......	1	1	5
June..........	5	3	....	3	8	......	......	......	4	4	4
July...........	4	10	13	23	27	......	5	5	5	10	17
August	17	18	14	32	49	1	2	3	15	18	31
September ...	31	29	10	39	70	4	1	5	32	37	33
October	33	16	8	24	57	1	4	5	31	36	21
November....	21	10	1	11	32	......	......	......	18	18	14
December	14	4	2	6	20	......	1	1	16	17	3
Summary for the year	9*	106	49	155	164	6	13	19	142	161	3†

*Cases on hand at the beginning of 1915.
†Cases on hand at the close of 1915.

TABLE No. 23.

Showing Number of Cases of Diphtheria, Scarlet Fever and Measles Reported to the Health Department, and the Deaths from These Diseases During Each Month of 1915,

MONTHS	DIPHTHERIA						SCARLET FEVER						MEASLES					
	Cases			Deaths			Cases			Deaths			Cases			Deaths		
	White	Colored	Total	White	Oolored	Total	White	Colored	Total	White	Colored	Total	White	Colored	Total	White	Colored	Total
January	23	0	23	1	0	1	27	1	28	0	0	0	4	0	4	0	0	0
February	8	0	8	0	0	0	32	1	33	0	0	0	4	1	5	0	0	0
March	12	0	12	0	0	0	41	3	44	0	0	0	4	0	4	0	0	0
April	4	0	4	1	0	1	40	0	40	0	0	0	3	1	4	0	0	0
May	4	0	4	0	0	0	9	1	10	1	0	1	0	0	0	0	0	0
June	4	1	5	0	0	0	14	1	15	0	0	0	7	0	7	0	0	0
July	1	0	1	0	0	0	4	0	4	0	0	0	5	1	6	0	0	0
August	7	0	7	0	0	0	5	0	5	0	0	0	1	0	1	0	0	0
September	24	0	24	0	0	0	6	0	6	0	0	0	0	0	0	0	0	0
October	87	4	91	1	1	2	21	1	22	0	0	0	2	0	2	0	0	0
November	87	13	100	2	0	2	23	1	24	0	0	0	1	0	1	0	0	0
December	32	1	33	0	0	0	13	2	15	0	0	0	5	0	5	0	0	0
Total	293	19	312	5	1	6	235	11	246	1	0	1	36	3	39	0	0	0

TABLE No. 24.

Showing Number of Cases of Whooping Cough, Chickenpox, and Smallpox Reported to the Health Department, and the Number of Deaths for Each Month of 1915.

MONTHS	WHOOPING COUGH						CHICKENPOX						SMALLPOX					
	Cases			Deaths			Cases			Deaths			Cases			Deaths		
	White	Colored	Total	White	Colored	Total	White	Colored	Total	White	Colored	Total	White	Colored	Total	White	Colored	Total
January	0	0	0	0	1	1	13	1	14	0	0	0	0	0	0	0	0	0
February	1	0	1	0	0	0	20	3	23	0	0	0	0	0	0	0	0	0
March	5	4	9	0	2	2	24	1	25	0	0	0	0	0	0	0	0	0
April	2	0	2	0	2	2	41	5	46	0	0	0	0	2	2	0	0	0
May	3	3	6	0	0	0	20	14	34	0	0	0	0	3	3	0	0	0
June	5	0	5	0	0	0	13	10	23	0	0	0	10	0	10	0	0	0
July	5	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
August	0	1	1	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0
September	1	1	2	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
October	0	0	0	0	0	0	7	1	8	0	0	6	0	1	1	0	0	0
November	4	0	4	0	0	0	21	0	21	0	0	0	0	0	0	0	0	0
December	9	0	9	0	1	1	15	2	17	0	0	0	0	0	0	0	0	0
Total	35	9	44	0	10	10	174	37	211	0	0	0	10	6	16	0	0	0

TABLE No. 25.

Meteorological Observations, 1915.*

MONTH	Highest Degree	Lowest Degree	Mean Degree	Rainfall in Inches
January	65	23	39	5.41
February	70	23	44	3.92
March	63	26	41	1.10
April	96	31	60	1.68
May	89	47	66	3.00
June	92	52	72	3.77
July	99	60	78	2.42
August	98	57	76	7.34
September	93	45	72	1.99
October	83	35	61	3.27
November	78	26	49	0.63
December	71	19	38	1.93
Total				36.46

*From reports of United States Weather Bureau.

REPORT OF THE MEDICAL INSPECTOR.

Dr. E. C. Levy,
Chief Health Officer, Richmond, Va.

Sir:

I have the honor to submit herewith my report as Medical Inspector for the year ending December 31, 1915.

This report does not cover the entire work done, for there are many important duties (such as, answering inquiries regarding cases in quarantine, examining children at this office and at their homes for contagious diseases) that are not herein enumerated.

The work for the past year has been unusually heavy, owing to the increase in demands made on the Medical Inspector to assist in making diagnosis in contagious diseases.

Annexation has offered many difficulties in handling contagious and infectious diseases, for the streets were often in bad condition, nor were many of them marked. Few of the houses were numbered. More revisits were made, and more time spent in the homes of the annexed territory in which contagious and infectious diseases occurred than in the old city, for the people there were not familiar with the city's quarantine laws, nor the methods used in taking precaution that others might be prevented from contracting the disease.

These increased duties with such difficulties make it impossible for one man to do the work properly, even when contagious and infectious diseases are not very prevalent. Should an epidemic of any of these diseases occur, particularly smallpox, the situation could not possibly be handled by the present force.

The Department needs a full-time Assistant Medical Inspector, who should be furnished an automobile in order to carry on the work as outlined when the position of Medical Inspector was established.

For the last seven months of the year my records have been kept by Miss Robinson, one of the Department's nurses. She has also assisted in taking release cultures from diphtheria patients. Her assistance has given me more time for the outside work.

During the time that Dr. Levy was on his vacation, Mr. Large, a third-year medical student, was engaged to assist in the typhoid work, to take blood cultures and revisit positive cases to see that proper precautions were being taken. He also assisted in vaccinating persons in neighborhoods where smallpox had broken out.

Despite our limited means and insufficient assistance, we feel that the results obtained, and the records established, in handling contagious and infectious diseases are very gratifying.

There were 7 cases more of typhoid fever reported in 1915 than in 1914, with the same number of deaths in each year; but the increase in population, by annexation and natural growth, gave us the lowest typhoid death rate on record since the Department was established. The death rate was 14.1 per 100,000 in 1914, and 12.3 per 100,000 in 1915.

In enforcing quarantine rules and keeping the patients properly isolated (where isolation was possible), I experienced very little trouble during the past year. I was generally welcomed by those caring for the cases. They were eager to get both written and oral instructions. Of course all did not fully realize the importance of carrying them out, but the results obtained show very few instances of secondary cases occuring where a physician had promptly diagnosed and reported a case.

There was no instance of milk or city water being under suspicion of conveying infectious diseases.

The hospitals of the city were visited at short intervals during 1915, as in the two preceding years, and inquiries made to learn if all reportable diseases had been reported to this Department. Similar inquiries were made of the various practicing physicians. By this method we were greatly helped in getting more prompt reports.

Table Showing Visits Made by Medical Inspector in 1915.

MONTH	Typhoid Fever	Diphtheria	Scarlet Fever	Measles	Chickenpox	Smallpox	Vaccination	Other Causes	Total
January	10	31	63	8	14	0	3	15	144
February	4	17	153	7	23	0	5	24	233
March	5	35	130	5	26	0	0	30	231
April	4	12	310	6	20	17	1	43	413
May	3	9	156	1	24	10	6	71	280
June	6	15	66	9	23	43	0	93	255
July	52	6	93	6	0	3	7	40	207
August	123	12	15	1	0	0	17	82	250
September	51	70	23	0	0	0	0	181	325
October	34	173	55	2	5	4	5	130	408
November	18	133	78	1	19	0	5	102	356
December	15	60	72	5	7	0	0	37	196
Total	325	573	1,214	51	161	77	49	848	3,298

The number of visits made by the Medical Inspector for various causes are not the same as the number of cases of the various diseases as shown by tables Nos. 21, 22 and 23, since more than one visit was frequently paid to one case.

To this should be added 1,144 visits for taking diagnostic and 1,053 for release cultures for diphtheria, also 145 visits for taking blood cultures and 219 for taking blood for Widals, making a total of 5,849 visits made during the year. This number includes the visits made by Miss Robinson, in taking release diphtheria cultures, and Mr. Large, for the time he was assisting.

TABLE

Showing Diphtheria Cultures Taken by Medical Inspector in 1915.

MONTH	DIPHTHERIA CULTURES TAKEN		
	Diagnosis	Release	Total
January	139	109	248
February	31	21	52
March	50	24	74
April	19	23	42
May	28	26	54
June	30	6	36
July	18	19	37
August	15	18	33
September	52	30	82
October	286	234	520
November	117	324	441
December	228	219	447
Cultures from sores	131	....	131
Total	1,144	1,053	2,197

NOTE—The above table covers only cultures taken by Medical Inspector. For table of all cultures examined in laboratory, see report of City Bacteriologist.

TYPHOID FEVER.

The year 1915 opened with 9 cases of typhoid fever on hand. Seven were carried over from the old city and 2 from the annexed territory. During the year 1915 there were 155 new cases reported, with 19 deaths, against 148 cases reported, with 19 deaths, in 1914, giving a death rate of 12.3 per 100,000 for 1915, against 14.1 for 1914.

To have had no increase in the number of deaths from typhoid fever in spite of an increase of 14 per cent. in population (by annexation and natural growth) showed a very satisfactory decrease in our death rate from this disease.

During the first six months of 1915 there were 22 cases reported, with no deaths. This was unusual, but a change came in July, when 23 cases were reported, with 5 deaths. One of these deaths was actually due to pulmonary tuberculosis. The patient had been sick for nine months, with every symptom of tuberculosis. Blood culture and Widal were both negative.

During August 32 cases, with 3 deaths; during September 39 cases, with 5 deaths; during October 24 cases, with 5 deaths; making a total of 118 cases, with 18 deaths, in the four months.

There were 16 cases, with 1 death, reported during the remaining two months. The fatal case, C. M., 21 years, fireman on boat plying between Richmond and City Point, was living on the boat when he first became sick. He was taken to one of our hospitals, where he took his bed December 13th, complaining of pain in epigastrium, chills and slight temperature. Malaria parasites were found at the hospital laboratory, and quinine was given. This caused a slight drop in his temperature. On December 20th, 7:30 A. M., he was taken with violent pains in upper right quadrant of abdomen; shock was profound, and his temperature dropped from 103 degrees to 97 degrees, with pulse 92. When operated on his appendix was found up under the liver, back of the colon, with an oblong perforation one-half inch from its base. The small intestines were acutely inflamed. Laboratory findings show:

Blood culture	Positive (taken day before death)
Widal	Atyicpal
Malaria	Positive (hospital)
Count	Normal

The death certificate was sent in signed, with cause of death "perforated appendix with peritonitis," before the findings of our Bacteriologist were known. Later, the physician was seen and told of these findings. He was requested to fill out a new certificate, giving typhoid as the cause of death, which he did.

This Department wants accurate statistics. Unless accurate diagnosis is made, accurate statistics are impossible. We do all in our power to assist the physicians of the city, by free use of our laboratory, also by meeting them in consultation when requested.

The City Bacteriologist examined blood cultures from 219 cases of suspected typhoid fever during 1915. Of this number, 145 were taken by me and my assistants. In every instance blood for a Widal and slides for malaria were taken, as well as the blood culture, and where a septic condition was suspected a differential blood count was made.

Several cases that would have been diagnosed typhoid fever, and two deaths that would have gone to typhoid, were found, by the differential count, to be septic, and not typhoid, fever.

Three cases of suspected typhoid showed tubercle bacilli in their sputum. Two cases were malaria.

Out of the total number of typhoid cases (155) reported, 45, known and estimated, contracted the disease outside of Richmond, 28 cases occurred south of James river, and the remaining cases were well scattered over the city. In the territory between Laurel and Robinson and south of Main, 22 cases were found, which was decidedly higher than in other sections. Eleven cases were reported from the territory recently annexed.

Out of 110 cases contracted in Richmond, 12 used well water and had dry closets, while 5 used city water but lived on premises that had no sewer connection, making a total of 17 cases that occurred on premises with dry closets.

In only 8 homes were there secondary cases. From 2 of these homes, 11 secondary cases occurred. In the remaining 6 homes, 8 cases were reported.

In an Italian family, living on West Cary Street, there were 8 secondary cases. The original case was not diagnosed until five other children had been taken ill.

Although repeatedly instructed in typhoid precautions, by the doctors and by the visiting nurses attending these cases daily, the parents either would not or could not carry them out as directed. Also, they refused to let the sick children be taken to a hospital, or to allow the well children to leave the premises.

Three of these cases had hemorrhages, but all 9 recovered.

In 2 of the remaining 7 homes, the primary cases were contracted out of the city.

One hospital nurse contracted typhoid while nursing a fatal case.

All secondary cases were due either to the physician's failure to make diagnosis (in which case no precautions were taken to protect the family) or to the family's failure to carry out instructions given for their protection.

Out of the 19 fatal cases of typhoid fever, 13 were contracted in Richmond and 6 outside of Richmond.

By referring to Dr. Levy's report, a brief history of these fatal cases can be found.

Table Showing the Number of Cases, Deaths and Death Rate from Typhoid Fever for Each Year from 1907 *to* 1915 *Inclusive.*

YEAR	CASES REPORTED			DEATHS			DEATH RATE PER 100,000		
	White	Colored	Total	White	Colored	Total	White	Colored	Total
1907	395	100	495	37	10	47	52.5	23.3	41.4
1908	388	106	494	39	18	57	54.6	41.5	49.7
1909	293	83	376	18	10	28	24.9	22.8	24.1
1910	197	66	263	15	13	28	18.6	27.5	21.9
1911	188	63	251	16	7	23	19.6	14.7	17.7
1912	147	61	208	16	6	22	19.4	12.5	16.7
1913	178	55	233	18	9	27	21.6	18.5	20.3
1914	98	50	148	8	11	19	9.4	22.2	14.1
1915	106	49	155	6	13	19	6.1	22.9	12.3

Table Showing Cases of Typhoid Fever Contracted In and Out of the City During 1915.

Cases certainly contracted in city	105	
Cases in which information was not conclusive:		
3 probably contracted in city (probability 75%)	2	
6 with equal probability (probability 50%)	3	
1 possibly contracted in city (probability 25%)	1	
Total cases contracted in city (known and estimated)	110	71 per cent.
Cases certainly contracted out of city (known and estimated)	45	29 per cent.

TABLE

Showing Deaths and Death Rate from Typhoid Fever in 1915.

	No. of Deaths	Death Rate Per 100,000
Total deaths	19	12 3
White	6	6 1
Colored	13	22.9
Contracted in Richmond	13	8.4
White	3	3 1
Colored	10	17.7
Contracted out of Richmond	6	3.9
White	3	3.1
Colored	3	5.3

TABLE

Showing the Case Fatality of Typhoid Fever in 1915.

CASES	No. of Cases	No. Cases Terminated	Deaths	Case Fatality Per Cent.
On hand January 1, 1915	9	9	0	0
Reported in 1915	155	152	19	12.5
Total under treatment in 1915	164	161	19	11 8
Cases contracted 1915:				
White	106	103	6	5.4
Colored	49	49	13	26.5
Contracted in Richmond (estimated)	110	110	13	11.8
Contracted out of Richmond (estimated)	45	42	6	14 3
Corrected figures for 1914, from final outcome of all cases reported during the year*	153	153	19	12.4

***When the 1914 annual report was submitted, 9 of the cases reported during that year were still on hand, 7 from the old city and 2 from the annexed territory. None subsequently proved fatal.**

DIPHTHERIA.

There was a decided increase in the number of diphtheria cases reported in 1915 over 1914. There were 312 cases reported, with 6 deaths, in 1915, against 208 cases reported, with 4 deaths in 1914.

The disease, for the most part, though mild, was highly contagious, as shown by the number of cases, also by the various parts of the body attacked.

The following table shows the different types of diphtheria, with their various combinations, that occurred in 1915.

TABLE

Showing the Different Types, and the Various Combinations, of Diphtheria that Occurred During 1915.

	Tonsillar	Nasal	Laryngeal	Tonsillar Nasal	Tonsillar Nasal Laryngeal	Tonsillar Laryngeal	Nasal Laryngeal Skin	Tonsillar Middle Ear	Nasal Middle Ear	Laryngeal Middle Ear	Middle Ear	Skin Middle Ear Tonsillar Laryngeal	Post-Diphtheria Paralysis	Total
White........	203	38	36	4	1	2	3	1	1	1	2	1	0	293
Colored.......	11	2	2	0	0	2	0	1	0	0	0	0	1	19
Total......	214	40	38	4	1	4	3	2	1	1	2	1	1	312

I desire to call attention to the fact that the 7 cases of middle ear trouble proved to be diphtheria by the finding of typical Klebs-Loeffler bacilli. The ears were exceedingly painful and the cases ran a high temperature until the drum ruptured, allowing free drainage. Then the symptoms subsided. These cases ran a chronic course similar to nasal diphtheria, with copious discharge, which excoriated the ears and neck. In every case the history given showed previous diphtheria in other parts of the body. Five cases gave history of skin sores (these sores showing Klebs-Loeffler bacilli); one gave a history of tonsillar infection; while another, a child of 18 months, had a slight nasal discharge several days before the ears became involved. This case was admitted to the children's ward in the Virginia Hospital, where the culture was taken.

Cultures should be taken from all discharging ears, and, if positive, large doses of antitoxin should be administered, in order that the disease may be promptly controlled.

The cases of diphtheria reported during the year were well distributed over the city. Church Hill and the territory in South Richmond lying west of Hull street, east of Semmes avenue, south of 5th and north of 12th streets, inclusive, had more cases for the area than any other section of the city. The extreme West End was practically clear of diphtheria during the year.

Twice during the year diphtheria was found at the Virginia Hospital. One of the nurses contracted the disease while on her vacation. She was on duty preparing patients' trays in the diet kitchen when her case was diagnosed. Three nurses contracted diphtheria from her, but all patients escaped the disease. The other case was the child admitted to the children's ward before diagnosed.

At the Union Theological Seminary there were 4 cases of diphtheria. These were traced to a carrier, who was isolated as soon as located. After that no further cases developed.

Several cases were sent from the Children's Home Society to the City Home; in each instance traced to some child just brought in who was a carrier or had had the disease.

One out-of-town case was taken to the Eye and Ear Infirmary, to be treated for simple laryngitis; was promptly recognized as laryngeal diphtheria, and antitoxin given.

Another case was brought from Farmville, Va., to have her tonsils removed; the throat looked suspicious of diphtheria; a culture was taken, which showed positive. The child, with both parents, was staying in a large boarding house, on Ninth street, where there were several small children. Not without great difficulty and loss of time could a suitable place be found to which the case might be removed and properly treated.

This is another proof of the city's great need of a place for contagious diseases where patients may be isolated and have modern conveniences. The need is especially great for transients who are able to pay for hospital accommodations.

In March, the Health Department's diphtheria nurse contracted the disease while nursing a very severe case of nasal and laryngeal diphtheria. She was given 15,000 units of antitoxin at the onset and 10,000 units later. Her case was severe.

The 33 secondary cases occurred in 26 different homes during the year. One return case developed diphtheria ten days after the primary case had been released. A negative culture was secured from the nose and throat of this child at the time the first case was released.

The practice of taking cultures from the nose and throat of all children in the house before releasing the diphtheria case (from whom two consecutive negatives, taken at least 24 hours apart, have been secured) has been carried out, strictly, for two years with excellent results.

This return case was the first and only case during the past two years to develop the disease within six weeks after the termination of quarantine.

There were 43 cases of laryngeal diphtheria during the year. Sixteen of these were intubated. Five of the intubated cases died. A brief history of these and the four other fatal cases of diphtheria is given in Dr. Levy's report.

Of the 312 cases reported, 14 were adults—5 males and 9 females.

There were five deaths among the white and one among the colored cases during the year. In Dr. Levy's report a brief history of the six fatal cases may be found.

SUMMARY OF DIPHTHERIA STATISTICS.

Total number of cases reported	312
White	293
Colored	19
Total number of deaths	6
Case fatality	1.9
Death rate per 100,000	3.9

SKIN DIPHTHERIA.

While investigating the reported cases of diphtheria in September, I noticed, in practically every home where there was a case of diphtheria, that either the child who had the disease or another child in the home had bad looking sores on the hands, feet or legs.

Having seen a number of diphtheria sores that occurred in patients with other forms of the disease, I decided that there must be a close relationship between these and the reported cases, as the sores were typical looking diphtheria sores.

With exception of a few cases that were directly traceable to previously known cases of diphtheria, in many instances, until diphtheria became too prevalent, we traced the cases that developed to sores showing typical diphtheria bacilli.

Whether this is an unusual way by which diphtheria is spread, or is the common way that has heretofore been overlooked, I cannot say. But we have evidence to believe it to be a very important way by which the disease is scattered.

In one family where the skin sores showed typical diphtheria bacilli, four cases developed diphtheria within three days—three tonsillar cases and one laryngeal case.

In another home, three cases developed about the same time—two tonsillar and one laryngeal. Cultures taken from the sores on the legs of a brother of these cases showed typical diphtheria bacilli.

One case, F., 2 years, gave a history of a burned finger over which a dirty grey membrane developed. The would would not heal. Two or three weeks afterwards both ears began to discharge; then, in four or five days, she became croupy. A physician was called, who diagnosed the case laryngeal diphtheria. The case was intubated and given a large dose of antitoxin. Cultures were taken from the sore, ears and throat, and each showed diphtheria bacilli.

Every case of skin diphtheria gave a history of some skin lesion prior to the infection, such as, mosquito bites, cuts, burns, finger nail scratches, and other skin abrasions.

The skin lesions are infected either by the person himself, by some one who has an unrecognized case of diphtheria, or by a diphtheria carrier. These lesions are usually located on the feet or legs, although I have seen them on all parts of the body.

No constitutional symptoms are produced by skin diphtheria unless it involves a mucous membrane.

One case, a boy, 9 years, had a lesion on the corner of his mouth, which involved the mucous membrane. He ran a temperature of 104 degrees, pulse 120, and was delirious for a short while. A practically pure culture of diphtheria bacilli was secured from the lesion, while those from the nose and throat were negative. Antitoxin, subcutaneously given, promptly relieved the condition.

Over 692 cultures were examined from sores. Out of the total number, 160 were positive. Nineteen cases contracted true diphtheria (throat) from their own sores, while 21 others apparently contracted diphtheria from positive sores on others in the house.

The public schools were visited and cultures taken from all children with suspicious loking sores. More than 100 children were excluded from school on account of positive sores. Several of these quarantined cases developed diphtheria of the usual types.

Antitoxin locally applied to these sores seems to be the best method of treatment.

SCARLET FEVER.

During the year 1915 there were 246 cases of scarlet fever reported, with only one death; while in 1914 there were 203 cases reported, with two deaths.

Throughout the year the disease was very mild. In many instances the cases were not confined to their beds. Some were not recognized as having the disease until peeling commenced, which accounts for the increase in the number of cases reported.

In February, two of the nurses in training at the Memorial Hospital developed scarlet fever. Both cases broke out while on duty. As soon as the nature of the disease was recognized, they were relieved from duty and promptly isolated in the hospital. No other cases developed from this source. This is the only instance during the year where scarlet fever developed in any of our institutions.

I want to urge that in all cases of scarlet fever which show a distinct and persistent membrane, especially where there is a persistent blood discharge from the nose or ears, that cultures be taken to determine whether or not Klebs-Loeffler bacilli are present. In every instance where true diphtheria was found complicating scarlet fever, the prompt administration of antitoxin was followed by a rapid improvement of the patient's condition.

During the two and one-half years that I have had the present position, 11 cases of true diphtheria complicating scarlet fever have been diagnosed, 2 of which proved fatal.

Table Showing Number of Secondary Cases of Scarlet Fever, also the Number of Days Elapsing After the Eruption of the Primary Case or Cases.

Days elapsing after eruption of primary case	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	..	..	32	Total
No. secondary cases	9	3	3	1	1	..	1	2	1	1	1	1	1	..	..	..	..	..	2	..	..	1	28

The 28 secondary cases of scarlet fever developed in 24 different homes. Of the 17 cases that developed within five days after the eruption of the original case, 15 developed within three days, one on the fourth day and one on the fifth day. Of the 11 remaining cases, 4 were in homes where the primary case, or cases, had not been recognized until the other cases developed. After exposure, these cases developed at intervals of from 9 to 19 days, with an average of 13.4 days.

Five other cases, promptly diagnosed, occurred in homes where the instructions given in the primary case to prevent spread of the disease had not been carried out. After exposure, these cases developed at intervals of from 7 to 12 days, with an average of about 9 days.

Twelve cases developed in persons over 21 years of age.

The fatal case, W. F., 9 years, broke out on April 25th and died on May 1st from acute nephritis.

SUMMARY OF SCARLET FEVER STATISTICS FOR 1915.

Total number of cases reported	246
White	235
Colored.	11
Total number of deaths	1
Case fatality	.4
Death rate per 100,000	.6

MEASLES.

During the year 1915 there were only 39 cases of measles reported. Of these, 36 were white and 3 were colored. There was no death from this disease. Only one case was on record at the end of the year.

SUMMARY OF MEASLES STATISTICS.

Total number of cases reported	39
White	36
Colored	3
Number of deaths	0
Case fatality	0
Death rate per 100,000	0

CHICKENPOX.

During the year 1915 there were 211 cases of chickenpox reported, of which number 174 cases were white and 37 cases were colored.

One case reported by card as chickenpox was a well developed case of smallpox. A full history of this case is given in my report on smallpox.

In many instances I was asked by the physician in charge to assist in making a diagnosis in adult cases.

SMALLPOX.

There were 16 cases of smallpox reported in 1915. Five of these were contracted outside of Richmond, while 9 cases were traced to a case that contracted the disease while working at City Point, Va. Two other cases were traced to a case that broke out about ten days after arriving here from North Carolina, having stopped at Newport News for five days before coming to Richmond.

The city was free from smallpox until April, when two cases were reported. One of the two cases (a colored man) contracted the disease in Oxford, N. C., and broke out after coming to Richmond. He worked at the Mayo Plug Tobacco Factory two days after he was well broken out. The entire factory force was immediately vaccinated. No other cases occurred at the factory, but, in May, two cases were found that contracted the disease from this patient. One case, C. M., 65 years, after being exposed to the above case, worked at Hood's Nursery, in the county. When he became sick he returned to 7 Fell street, but was not found until nearly well, since the disease had been of a type so mild he had not called a doctor. The other case, C. F., 17 years, broke out while in service at 901 Barton Avenue. She applied for admittance to City Home. There the case was seen by me and sent to Smallpox Hospital. In taking the history of her case, the above case was located.

The second case, C. M., 23 years, reported in April, contracted smallpox in Alexandria, Va. He broke out, six days after coming here, while working on a railroad force near Fulton. He lived in a house with 24 other men, all of whom were promptly vaccinated, which stopped the spread of the disease.

In May, a case, C. M., 34 years, was taken ill in a box car at the Southern Railroad Camp, at the foot of the Free Bridge. This case was sent to the Virginia Hospital with a tentative diagnosis of typhoid fever. The morning after he arrived at the hospital an eruption was noticed. I was called in to see the case that afternoon. Believing that it was a beginning case of smallpox, Dr. West, our consultant on smallpox, was called. He, also, thought the man had smallpox. The case was sent to the Smallpox Hospital. The nurses, orderlies and patients in the hospital, also the entire force at the Southern Railroad Camp (about 350 men), were vaccinated. No secondary cases developed.

In June, 10 cases were reported. These resided within a few blocks of each other, but we had much difficulty in tracing the original case.

The first case reported, W. M., 28 years, resided at 2112 Pleasant street, and worked in a barber-shop on Venable street. The case was reported, by card, as chickenpox, but was recognized as a well developed case of smallpox and sent to the Smallpox Hospital. The six unvaccinated persons in the house where he resided were vaccinated and quarantined for 14 days. None developed the disease.

The second case, W. F., 22 years, resided at 1838 Venable street. From this case two others, her baby and her husband, developed smallpox. Her husband (who had never been successfully vaccinated) was vaccinated and quarantined, but developed a mild case. All were sent to the Smallpox Hospital.

The third case of this series, W. M., 24 years, resided at 800 Mosby street. He worked for the Structural Steel Company four days after breaking out with the disease. A druggist reported the case as having a bad eruption. I went to the address, immediately, but the patient had gone out. At a ball game, then in progress in the neighborhood, I made inquiries for this man, and he was soon located in the large crowd. His case was well developed. The day after breaking out he had played a violin at a dance in Fairmount Hall.

These three cases, reported within four days, living in the same neighborhood yet not knowing one another, convinced Dr. Levy and myself that there were unrecognized cases in the vicinity.

First inquiries in the neighborhood were without result, but by house to house canvass the original and four other cases in various stages of the disease were located at 2012 and 2010 Venable street. The original case, W. M., 28 years, resided at 2012 Venable street. He contracted the disease at City Point, broke out about the last of April, and was at large during the entire course of the disease. He was directly responsible for nine other cases. Two of these developed in the same house at which he resided; the woman with whom he boarded, W. F., 41 years, and her daughter, W. F., 20 years. Both worked at a pickle factory during the entire time of eruption, except for the two or three days that they were ill. The daughter had attended moving picture shows, Hoge Memorial Sunday School (every Sunday), and was at large during the Confederate Reunion. These three cases were first seen by a physician who failed to make a correct diagnosis.

Two other cases were found next door (2010 Venable street), ages 5 and 7 years, who had not fully recovered. They were sent to the Smallpox Hospital.

All persons intimately exposed to cases were vaccinated and quarantined. Others in the neighborhood were vaccinated. By this method we prevented a further spread of the disease.

The city was free from smallpox from July until October 25th, when a case was reported. This case, C. M., 28 years, was a fireman on the Southern Railroad between Danville and Richmond. He broke out in Danville on October 15, 1915, came to Richmond on October 24th, and consulted a physician, who recognized the disease. He was sent to the Smallpox Hospital.

Of the 16 cases reported during the year 1915—10 white and 6 colored—none had ever been successfully vaccinated. There were no deaths resulting from smallpox in 1915.

I desire to express my sincere thanks to the physicians of the city for their hearty co-operation and for the many courtesies they have shown me. I wish to add that it is my desire to assist them in every way possible.

Respectfully submitted,
B. E. SUMMERS, M. D.,
Medical Inspector.

REPORT OF BACTERIOLOGIST.

Dr. E. C. Levy,
Chief Health Officer, Richmond, Va.

Sir:

I have the honor to submit herewith my report as City Bacteriologist for the year ending December 31, 1915.

There were 5,861 specimens examined during the year, an increase of 2,215 specimens over 1914. These specimens were as follows:

		1913		1914		1915	
Diphtheria	Diagnosis	871		1,423		2,656	
	Release	498		757		1,325	
	Total		1,369		2,180		3,981
Typhoid Fever	Widal tests	437		364		547	
	Diazo tests	38		33		14	
	Other tests	60		121		219	
	Total		535		518		780
Tuberculosis		808		801		780	
Malarial Fever		129		132		270	
Other diagnostic tests		8		15		50	
Total		2,849		3,646		5,861	

In addition to the diagnostic work of the laboratory, 1,731 samples of milk and cream were examined, making a total of 7,592 examinations for the year.

TYPHOID FEVER.

Although the diazo test has not been in demand, the number of widal tests and blood cultures shows a marked increase over last year.. An effort has been made to secure a blood culture from every suspected case of typhoid fever in the city, and this test is now being strongly recommended over either the Widal or diazo test.

Table Showing Comparative Results of the Widal Reaction and Blood Culture Examinations, Where Both of These Examinations Were Made.

RESULTS OBTAINED FROM BLOOD CULTURES	RESULTS OF WIDAL REACTION		
	Positive	Negative	Atypical
Positive for typhoid fever	10	14	6
Negative for typhoid fever	20	86	14
Culture contaminated	4	18	0

Of the 30 cases giving positive cultures, all proved typhoid clinically.

Of the 120 cases giving negative blood cultures, 20 gave positive Widal reactions, of which 14 proved clinically typhoid; 86 gave negative

Widal reactions, of which 13 proved clinically typhoid; and 14 gave atypical Widal reactions, of which 5 proved clinically typhoid fever. From these figures, the blood culture was upheld by clinical findings in 78.7 per cent of the cases, while the Widal test was upheld in only 70.6 per cent.

The period of time elapsing between the onset of the disease and the taking of the specimens which gave positive Widal reactions ranged from 2 to 30 days, with an average of 14.9 days.

The period of time elapsing between the onset of the disease and the taking of the specimens which gave positive blood culture ranged from 2 to 23 days, with an average of 9.8 days.

The blood culture is strongly recommended over the Widal test, owing to the fact that the Widal test may be positive due to an attack of typhoid fever at some previous time as well as following inoculation with typhoid vaccine, and is also occasionally met with in the blood of individuals from whom it is not possible to obtain history of either inoculation with vaccine or a previous attack of typhoid fever; while a positive blood culture is regarded as a certain indication that the patient has typhoid fever; and, as the blood culture is more likely to be positive if taken early in the disease, the physicians of the city are encouraged to have this test made in even suspicious cases, without waiting for the disease to develop.

CULTURES TAKEN FROM SORES EXAMINED FOR DIPHTHERIA BACILLI.

There were examined for diphtheria 692 cultures taken from sores. These were as follows:

	October	November	December	Total	Percentage
Positive	70	84	6	160	23.1
Negative	213	243	25	481	69.5
Atypical	31	16	1	48	7.0
Unsatisfactory	2	1	0	3	0.4
Total	316	344	32	692	....

Pure cultures were isolated from four cases. Each of these cultures was grown on sugar-free broth for seven days at 37 degrees centigrade, after which it was killed by the addition of trikresol solution and one-half cubic centimeter injected subcutaneously into the abdomen of a guinea pig. The results are tabulated below:

Culture	Pig	Wt. in Grammes	Amt. Antitoxin Rec'd	Result
31	A	275	None	Recovered
31	A'	400	1,000 Units	Recovered
36	B	390	None	Died—Diph. Lesion
36	B'	475	1,000 Units	Recovered
41	C	350	None	Died—Diph. Lesion
41	C'	270	1,000 Units	Recovered
74	D	300	None	Recovered
74	D'	275	1,000 Units	Recovered

Culture 31 was taken from a sore on the leg of a child attending school.

Culture 36 was taken from a sore on another child attending the same school.

Culture 41 was taken from a sore on a child in whose family another child had, twelve days after this culture was taken, a typical case of diphtheria, both clinically and bacteriologically.

Culture 74 was taken from a sore on a child after it had been diagnosed as cutaneous diphtheria and had been under treatment for about two weeks.

VACCINATIONS.

During the year I vaccinated 165 persons in the office, as follows:

	White	Colored	Total
Primary	73	24	97
Secondary	52	16	68
Total	125	40	165

Bacteriological Laboratory—Summary of Diagnostic Work for 1915,

MONTHS	PURPOSE OF EXAMINATION	DIPHTHERIA						TYPHOID FEVER						BLOOD CULTURES				TUBERCULOSIS			MALARIA			Total Examinations of all Kinds
		RESULT OF EXAMINATION							RESULT OF EXAM.					SPECIMEN				RESULT			RESULT			
		Positive	Negative	Atypical	Specimen Unsatisfactory	Total		TEST	Positive	Negative	Atypical	Total		Positive	Negative	Unsatisfactory	Total	Positive	Negative	Total	Positive	Negative	Total	
January......	Diagnosis	18	213	4	0	235	374	Widal....	5	28	4	37	39	0	6	0	6	11	76	87	0	15	15	521
	Release.	41	95	0	3	139		Diazo....	1	1	0	2												
February	Diagnosis	7	73	1	0	81	115	Widal....	2	12	2	16	17	0	2	0	2	9	54	63	0	7	7	204
	Release.	4	30	0	0	34		Diazo....	1	0	0	1												
March........	Diagnosis	10	108	5	0	123	147	Widal....	1	11	3	15	16	0	6	0	6	17	72	89	1	11	12	270
	Release.	5	19	0	0	24		Diazo....	0	1	0	1												
April.........	Diagnosis	1	70	1	0	72	97	Widal....	1	16	2	19	21	0	2	0	2	14	51	65	0	10	10	195
	Release.	8	17	0	0	25		Diazo....	0	2	0	2												
May :.........	Diagnosis	5	37	0	0	42	69	Widal....	2	26	5	33	33	0	7	0	7	16	51	67	1	6	7	183
	Release	9	17	0	1	27		Diazo....	0	0	0	0												
June..........	Diagnosis	5	57	4	0	66	76	Widal....	6	43	7	56	58	0	11	0	11	14	48	62	0	30	30	237
	Release	5	5	0	0	10		Diazo....	0	2	0	2												
July	Diagnosis	4	47	0	0	51	74	Widal...	13	70	11	94	98	6	25	5	36	17	43	60	0	48	48	316
	Release.	2	21	0	0	23		Diazo....	0	4	0	4												
August	Diagnosis	8	23	4	1	36	51	Widal....	15	72	11	98	98	17	28	8	53	17	43	60	2	50	52	314
	Release.	8	7	0	0	15		Diazo....	0	0	0	0												

Bacteriological Laboratory—Summary of Diagnostic Work for 1915—Continued.

MONTHS	PURPOSE OF EXAMINATION	DIPHTHERIA						TYPHOID FEVER						BLOOD CULTURES				TUBERCULOSIS			MALARIA			Total Examinations of all Kinds
		RESULT OF EXAMINATION						TEST	RESULT OF EXAM.					SPECIMEN				RESULT			RESULT			
		Positive	Negative	Atypical	Specimen Unsatisfactory	Total			Positive	Negative	Atypical	Total		Positive	Negative	Unsatisfactory	Total	Positive	Negative	Total	Positive	Negative	Total	
September ...	Diagnosis	30	59	6	0	95	135	Widal....	17	65	4	86	88	7	47	6	60	13	44	57	2	55	57	397
	Release .	16	24	0	0	40		Diazo	1	1	0	2												
October.......	Diagnosis	165	503	51	7	726	1,009	Widal ..	5	43	9	57	57	2	18	5	25	14	52	66	1	16	17	1,174
	Release .	55	224	0	4	283		Diazo	0	0	0	0												
November....	Diagnosis	155	514	28	4	701	1,148	Widal....	0	13	1	14	14	0	1	3	4	14	39	53	0	6	6	1,225
	Release .	61	383	0	3	447		Diazo....	0	0	0	0												
December	Diagnosis	37	369	15	2	423	681	Widal....	0	19	3	22	22	2	4	1	7	14	37	51	1	8	9	770
	Release .	45	211	0	2	258		Diazo	0	0	0	0												
Total........	Diagnosis	....	....	......	....	...	2,651	Widal....	....	....	....	...	547	Positive....			34	Post've		170	Post've		8	
	Release .	....	....	......	....	...	1,325	Diazo....	....	....	....	..	14	Negative ..			157	Neg've		610	Neg ve		262	
														Unsatisf'ry			28							
	Total. .	....	.. ..	......	....	...	3, 76	Total....	....	....	....	..	561	Total.......			219	Total		780	Total		270	5,806

In addition to the above routine examinations the following examinations were also made:

Para-Typhoid Fever Agglutination Tests................................	36
Examinations of Water	12
Examinations for Hookworm...	2
Diphtheria—Direct Swab Examinations...................................	3
Diphtheria—Five Hour Cultures	2
Total	5,861

BACTERIOLOGICAL EXAMINATION OF MILK.

During the year 1915 bacteriological examination was made of 1,731 samples of milk and cream, as against 1,742 samples examined during 1914, a decrease of 11 samples.

These samples were examined as follows:

Jan.	Feb.	Mch.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
133	138	119	192	110	166	156	153	156	157	120	131	1,731

Of the 1,731 samples, 289 were samples of milk and cream which had been pasteurized; 318 were samples used for churning only; and 1,124 were samples of regular market milk.

TABLE A.

Bacteriological Examination of Regular Market Milk, Showing the Number of Samples in Each Class.

CLASS Bacteria per C. C.	January	February	March	April	May	June	July	August	September	October	November	December	Total
Below 10 000	29	18	43	66	38	56	41	37	49	36	48	51	512
10,000 to 50,000	44	46	21	47	19	33	36	37	31	47	24	46	431
50,000 to 100 000	7	6	7	8	3	9	8	11	10	14	5	7	95
100,000 to 250,000	10	7	2	6	3	4	1	3	4	7	3	5	55
250,000 to 500,000	6	1	0	0	1	0	0	4	0	3	1	0	16
500,000 to 1,000,000	0	3	0	0	0	3	2	0	2	2	0	1	13
1,000,000 to 2,000,000	0	0	0	1	0	1	0	0	0	0	0	0	2
Number of samples	96	81	73	128	64	106	88	92	96	109	81	110	1,124
Average air temperature at 8 A. M. in Degrees F. on days on which samples were taken	32.0	36.0	35.6	59.7	61.2	68.0	74.2	72..7	71.0	57.7	40.7	29.5	53.2

TABLE B.

Bacteriological Examination of Regular Market Milk, Showing the Percentage of Samples in Each Class.

CLASS Bacteria per C C.	January	February	March	April	May	June	July	August	September	October	November	December	Percentage of Total in Each Class
Below 10,000	30 2	22.2	58.9	51 6	59.4	52.8	46.6	40.2	51.0	33.0	59.3	46.4	45.6
10.000 to 50,000	45.8	56 8	25.8	36 7	29.6	31.2	41.0	40.2	32.3	43.0	29.6	41.9	38.3
50.000 to 100,000	7.3	7.4	9.6	6.2	4.7	8.5	9.0	11.9	10.4	12 9	6.2	6.4	8.4
100,000 to 250,000	10.4	8.7	2.7	4.7	4.7	3.8	1.1	3.3	4.2	6.4	3.7	4 5	4.9
250.000 to 500,000	6.3	1.2	0.0	0.0	1.6	0.0	0.0	4.4	0.0	2.7	1.2	0.0	1.4
500,000 to 1,000 000	0.0	3.7	0.0	0.0	0.0	2 8	2.3	0.0	2.1	1.8	0.0	0.9	1.2
1,000,000 to 2 000,000	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.2

TABLE C.

Bacteriological Examination of Cream and of Milk Used for Churning Only, Showing the Percentage of Samples in Each Class.

CLASS Bacteria per C. C.	January	February	March	April	May	June	July	August	September	October	November	December	Percentage of Total in Each Class
Below 10,000	26.1	31.3	62.5	29.3	25.0	16.1	0.0	14.0	18.2	19.2	28.6	0.0	23.8
10,000 to 50,000	34.8	25.0	20.8	39.0	16.7	29.1	22.2	37.2	24.2	38.4	57.1	0.0	30.8
50,000 to 100 000	8.7	15.6	8.3	17.1	12.5	19.4	14.9	18.6	15.2	11.5	14.3	0.0	14.7
100’000 to 250 000	8.7	12.5	4.2	4.9	29.1	12.9	22.2	11.6	21.2	19.2	0.0	0.0	13.5
250,000 to 500,000	21.7	9.4	0.0	2.4	4.2	16.1	22.2	4.7	12.1	3.9	0.0	0.0	8.8
500,000 to 1,000,000	0.0	6.2	4.2	0.0	8.3	3.2	3.7	11.6	9.1	3.9	0.0	0.0	5.0
1,000.000 to 2.000,000	0.0	0.0	0.0	4.9	4.2	3.2	11.1	0.0	0.0	3.9	0.0	0.0	2.5
2.000,000 to 5,000,000	0.0	0.0	0.0	2.4	0.0	0.0	3.7	2.3	0.0	0.0	0.0	0.0	0.9
Number of samples	23	32	24	41	24	31	27	43	33	26	14	0	318

TABLE D.

Bacteriological Examination of Pasteurized Milk, Showing the Percentage of Samples in Each Class.

CLASS Bacteria per C. C.	January	February	March	April	May	June	July	August	September	October	November	December	Percentage of Total in Each Class
Below 1,000	0.0	4.0	13.6	30.4	0.0	20.7	9.8	11.1	18.5	13.7	16.0	9.5	12.8
1,000 to 5,000	7.1	16.0	40.9	26.1	27.3	55.1	39.0	16.7	44.5	36.2	32.0	52.4	34.6
5,000 to 10,000	35.7	36.0	27.3	30.4	4.5	24.2	14.6	5.5	29.6	31.9	20.0	28.6	23.3
10 000 to 50 000	42.9	24.0	9.1	13.1	36.4	0.0	24.4	50.1	3.7	18.2	32.0	9.5	20.4
50,000 to 100,000	14.3	16.0	0.0	0.0	18.2	0.0	4.9	11.1	3.7	0.0	0.0	0.0	5.2
100,000 to 250,000	0.0	0.0	0.0	0.0	13.6	0.0	7.3	5.5	0.0	0.0	0.0	0.0	2.4
250,000 to 500.000	0..0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
500,000 to 1 000 000	0.0	0.0	9.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7
Number of samples	14	25	22	23	22	29	41	18	27	22	25	21	289

TABLE

Showing Bacterial Index of the Market Milk Supply of Richmond for the Years 1912, 1913, 1914 and 1915.

YEAR	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct	Nov.	Dec.	Year
1912	93.8	92.7	90.1	90.4	86.0	81.8	77.4	72.4	81.1	89.1	86.2	73.2	85.9
1913	83.3	90.5	90.7	86.3	79.1	77.2	80.9	84.4	85.5	85.8	89.0	87.3	85.0
1914	88.8	87.9	90.1	89.2	90.0	89.1	87.6	93.1	91.9	77.0	86.6	79.6	87.6
1915	83.3	83.5	93.3	91.6	92.3	89.1	90.8	87.8	90.0	85.2	92.6	91.0	89.2

Respectfully submitted,

K. D. GRAVES, M. D.
City Bacteriologist.

REPORT OF CONSULTANT IN DIPHTHERIA.

Dr. E. C. Levy,
Chief Health Officer, Richmond, Va.

Sir:

I have the honor to submit herewith my report of cases of laryngeal diphtheria seen for the Health Department during the year ending December 31, 1915, also appended tabulated statement of laryngeal cases seen for the Health Department for nine years, 1907-1915, inclusive.

INTUBATED				NOT INTUBATED			TOTAL			Case Fatality, Per Cent.
Recovered	Died	Total	Case Fatality Per Cent.	Recovered	Died	Total	Recovered	Died	Total	
14	2	16	12.5	9	0	9	23	2	25	8 0

The 16 cases intubated were intubated on first visit. Of the 9 cases in which intubation was postponed upon first visit, none subsequently required either intubation or a second visit for observation.

Three cases coughed up the tube; one on the fourth day, reintubation not being necessary; one on the sixth day, having been extubated on the fifth day and re-intubated an hour later. For this re-intubation we used the next larger size, which was removed five days later, the patient making an uneventful recovery, having worn the tube altogether 11 days. The third case which coughed up the tube gives the following history: First extubation was done on the sixth day after intubation, at which time patient went without the tube 30 minutes; second extubation was done 8 days later, the patient requiring re-intubation in 10 minutes. The third extubation was done 4 days later, the patient going without the tube 20 minutes. Five days later the tube was coughed up, re-intubation not being necessary. The patient wore the tube altogether 23 days. Hoarseness existed for several days, a perfect recovery, however, following. This is the longest time a tube has been worn by any one of the 100 cases recorded in the appended table.

In addition to the 2 cases above mentioned, 3 others required one re-intubation each in half hour, one hour, and one and a half hours, respectively, the tube having been removed on the sixth day in each case.

In the 16 cases intubated, a well-defined membrane was seen in 8 cases, doubtfully present in 2 cases, none present in 3 cases, and no reliable observations could be made in 3 cases, owing to local difficulties.

One of the 2 fatal cases, a child, 2 years old, sick several days before a physician was called, was decidedly toxic and was suffering from pronounced dyspnoea when intubated, died 21 hours later from overwhelming toxemia. The other fatal case was a child, 3 years old, croupy for 5 days, with dyspnoea for 12 hours before intubation, general condition good, 20,000 units of antitoxin given, condition satisfactory to the fourth day, when death occurred suddenly, after several minutes of violent struggling and extreme distress. I am satisfied that the tube became plugged. Such accidents may occur in any intubation case, but, fortunately, we have had few of them.

We are pleased to report that 8 of the 16 cases (50%) ran a perfectly normal course for intubation cases, with no complications, 7 being extubated on the sixth day, and 1 on the eighth day. The 14 cases reported recovered had no sequelae.

I cannot refrain from repeating the admonition to physicians to have their laryngeal cases seen promptly with reference to intubation. The Medical Inspector should be advised at once of the condition, so that he may get in touch with the case, and, if necessary, provide for intubation—the delay in which may result in the death of the patient, if the case is not promptly reported. Failure of certain physicians, during the past year, to obtain intubation has resulted in lamentable disaster to their patients, hence the timely warning.

It is with great pleasure that I record my grateful appreciation of the cordial co-operation and invaluable assistance of the Medical Inspector, Dr. B. E. Summers, so cheerfully rendered in handling our laryngeal cases.

Cases of Laryngeal Diphtheria Seen for the Richmond Health Department for Nine Years, 1907 *to* 1915.

YEAR	INTUBATED				NOT INTUBATED			TOTAL			
	Recovered	Died	Total	Case Fatality, Per Cent.	Recovered	Died	Total	Recovered	Died	Total	Case Fatality, Per Cent.
1907	5	1	6	16.7	1	0	1	6	1	7	14.3
1908	3	1	4	25.0	0	0	0	3	1	4	25.0
1909	5	1	6	16.7	2	0	2	7	1	8	12.5
1910	14	2	16	12.5	4	0	4	18	2	20	10.0
1911	22	1	23	4.4	8	1*	9	30	2	32	6.3
1912	7	2	9	22.2	7	0	7	14	2	16	12.5
1913	7	4	11	36.4	2	0	2	9	4	13	30.8
1914	9	0	9	00.0	9	1†	10	18	1	19	5.3
1915	14	2	16	12.5	9	0	9	23	2	25	8.0
Total	86	14	100	14.0	42	2	44	128	16	144	12.5

*Congenital stenosis of larynx, making intubation impossible. Died in spite of tracheotomy.

†Neglected septic case, laryngeal symptoms not extreme; died from sepsis in a few hours.

NOTE: One out-of-town case intubated recovered. Gives Case Fatality Percent 11.8 for all cases intubated and Total Case Fatality Percent 8.0 for all cases seen.

Respectfully submitted,

P. D. LIPSCOMB, M. D.,
Consultant in Diphtheria.

REPORT OF SMALLPOX HOSPITAL.

Dr. E. C. Levy,
Chief Health Officer, Richmond, Va.

Sir:

I have prepared the following report of cases treated at the Smallpox Hospital for the year ending December 31, 1915.

	WHITE			COLORED			TOTAL		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Smallpox from Richmond	4	1	5	5	1	6	10	2	12
Smallpox from Henrico County	0	0	0	0	0	0	0	0	0
Suspects from Richmond	1	0	1	0	0	0	0	0	0
Total	5	1	6	5	1	6	10	2	12

The suspect was taken to the hospital and subsequently developed smallpox.

There were no deaths from smallpox during the year.

Respectfully submitted,

B. E. SUMMERS, M. D.,
Medical Inspector.

REPORT OF CHIEF NURSE.

Dr. E. C. Levy,
Chief Health Officer, Richmond, Va.
Sir:

I have the honor to submit herewith my report for the year ending December 31, 1915, briefly reviewing the work of the nursing staff of the Department, in connection with

(1) The Prevention of Infant Mortality.
(2) Tuberculosis.

PART 1.

I deem it almost superfluous to again call your attention to the routine work of the nursing staff, as your instructions in each and every line, have been carefully followed as in previous years, yet I feel the importance of touching on some portions of our work for the past year, identical with those brought out in former reports.

In connection with the work for the pevention of infant mortality, our efforts have been singularly successful, in spite of some very serious drawbacks, such as the illness of one member of our regular force, and not being able to retain the services of the extra nurses who were added to our number, incident to the annexation of suburbs. The work in general was thus impaired, as these districts had to be added to the work of our other nurses, whose prescribed disricts were already too large to do full justice to this great movement in behalf of child welfare.

The nurses of the Department continue to meet once each month with the nurses of the Instructive Visiting Nurse Association and Public Schools, which has proven very beneficial, as we have gained a great many new ideas by discussing the methods of each of these branches of Public Health work. We have also gleaned much valuable information at these meetings from the lectures given by you and other able physicians, along these lines.

During the past year we have taken on our list and recorded the histories of 1,616 babies, (or, 46.6 per cent. of all births recorded during the year), 758 white and 858 colored. Of this number 197 were dropped for various reasons, such as change of residence; our services not being desired in some instances, nor needed in others. This left 1,419 babies under supervision, in addition to 1,221 brought over from the previous year, which were dropped at different periods, when our services were no longer deemed necessary. Of the former number 1,616, there were only 25 deaths from infantile diarrhea, and of the latter number, or, 1,221, there were 13 deaths, making a total of 38 deaths from infantile diarrhea among the entire number of supervised babies. Of the 1,419 there were only 80 deaths from all causes, and 44 of the 1,221 brought over from 1914.

We feel especially encouraged with regard to our work among expectant mothers, which has steadily increased, and which is proving to be one of the chief avenues to healthy babyhood. The following table is an illustration of this branch of work:

Period Covered from January 1, 1915, *to December* 31, 1915.

Mothers Supervised	Visits Paid	Births	Live Births	Stillbirths	Miscarriages	Deaths of Infants		
						Under 1 Day	1 to 7 Days	8 Days to 1 Month
427	865	264	251	3	10	2	3	1

Death of Mothers in Childbirth			Cases of Eclampsia		Cases of Ophthalmia Neonatorum			
Before	During	After	Threatened	Developed	Total No.	Sight Saved	Sight Totally Lost	Sight Partially Saved
0	0	1	0	0	1	1	0	0

Figures of City as a Whole, Showing by Comparison What Effect Prenatal Care is Having upon Infant Mortality Rate, the Proportion of Miscarriages, Stillbirths, Deaths of Mothers, Etc.

Year	Births	Live Births	Stillbirths	Miscarriages	Mothers in Childbirth	Deaths of Infants		
						Under 1 Day	1 to 7 Days	8 Days to 1 Month
1915......	3,768	3,470	298	Unascertained	29	66	55	59

The number of cases of Ophthalmia Neonatorum among all supervised babies is steadily diminishing. When this work was first begun we discovered many cases, but at the present time, by careful instruction to all midwives and by persistent attention given to the prevention of this disease, it is now a rare one. As may be noted by referring to the second division of the table given above, there was but one case among babies of expectant mothers under our care. This case was carefully and successfully treated by a physician who kindly gave his services, and to whom we wish to tender our sincere appreciation.

The benefits of our instruction are also forcibly set forth by the decline in the death rate from diarrhea and enteritis. Since your deductions regarding the fact that this is an infectious disease, and your instructions to treat it as such, our nurses have paid special attention to the sanitary conditions of homes in which they visit, and when found to be insanitary, they are reported to the Chief Sanitary Officer. As an illustration of this, our nurse, in one of the lately annexed territories, found five cases of infantile diarrhea on one block, and on investigation, found several dry closets in the worst possible condition, one of which was without a door in the rear, and the entrance door in such shape that it could not be closed. Consequently, the flies swarmed there, carried the infection into homes within a wide radius thereof, thus causing the spread of this dread disease. These conditions were promptly reported and rectified, and no more cases of infantile diarrhea occurred in this immediate locality.

Following your directions further, our nurses give the most explicit instructions in all homes in which they visit, relative to the disposition of bowel discharges and the care of diapers of all babies, impressing upon those in charge, the fact that this is the most important single measure of prevention and reduction of infantile diarrhea, as all bowel discharges contain germs, even those of a healthy baby, and it is possible for a child to become infected by its own excreta. We also emphasize the necessity of protecting soiled diapers from flies and other agencies by which this dangerous material may be spread abroad. Of course, there are not always the same sanitary conveniences in every home; some are fortunate enough to have the modern water closet, where the flush is free, while in the next house we enter may be found an old style closet with scant flush, or, even worse, a dry closet. Consequently, our instructions as to the disposal of faecal matter are necessarily suited to each case.

We believe that another most important step toward the prevention of infant mortality is that of breast-feeding, and we make special efforts to instill into the minds of all mothers coming under our supervision, the advisability of this mode of feeding. I will give the following instance in illustration:

We had on our list a mother of eight children, three of whom died in infancy. This mother was taken under supervision of the Department nurse six months prior to the birth of her youngest child, which was the only one of her babies that was breast-fed. This was accomplished by instruction regarding the mother's diet and general health. The baby in question, when one year old, weighed 21 lbs., and more than its brother then two years old, who was artificially fed.

The following table shows the classification according to feeding of the 1,419 supervised babies:

KIND OF FEEDING	White		Colored		Total	
	Number	Per Cent	Number	Per Cent	Number	Per Cent
Breast	562	83.0	628	84.6	1190	84.0
Artificial	61	9 0	60	8.1	121	8 5
Mixed.	54	8.0	54	7.3	108	7 5
Total	677	100.0	742	100.0	1419	100.0

The records of the maternity and foundling hospitals under the inspection of the Board of Health and State Board of Charities and Correction continue to show improvement, and there was a decided decrease in the number of deaths at two of these institutions.

Outside of our regular districts we have had many calls from the most fashionable portions of the city, requesting instruction in regard to the feeding of babies as well as our advice in prenatal cases.

The reception of the Department nurse into the homes of the usual districts is most cordial, which was not always the case when this work was first begun. The following amusing little instance will give you some idea of how our services are sought.

Some time ago a negro man entered the office of the Board of Health and asked to see the head nurse. Upon inquiry as to the purport of his call, he replied: "Please marm, my wife done sent me up heah to git some of you all to come to our house and help us raise our child."

We wish to thank the Salvation Army, Associated Charities and Ice Mission for their material help and hearty co-operation, which did much toward furthering the success of our work. Sincere thanks is also due those of our friends who made us donations in money for the purpose of supplying milk to babies whose parents were unable to buy it, and who would have suffered and probably died but for their assistance. Donations thus received amounted to $52.50.

I beg to mention, en passant, that with the annexation of new territory and the resultant increase in field work, the amount of office work has proportionately increased, as may be readily noted from the tables I am handing you herewith.

Below is my tabulated report:

Babies brought over from 1914	1,221	
New babies under supervision during 1915	1,616	
Total number of babies under supervision		2,837
Expectant mothers under supervision		427
Visits for prevention of infant mortality		13,789
Visits to expectant mothers		865
Fatal cases of infantile diarrhea investigated		101
**"Special" visits paid		1,415
Number of mothers to whom practical instruction was given.		231
Birth certificates investigated		329
Birth certificates obtained		133
Number of babies furnished with supplies:		
Barley flour		73
Bottles		39
Milk tickets		23
Ice tickets		75
Hours spent in work for the prevention of infant mortality.		8,108
Deaths from diarrhea and enteritis among babies brought over from 1914	13	

Deaths from diarrhea and enteritis among new babies under supervision during 1915	25	
Total number of deaths from diarrhea and enteritis among supervised babies		38
Deaths from all causes among babies brought over from 1914	44	
Deaths from all causes among new babies under supervision during 1915	80	
Total number of deaths among supervised babies..		124

**"Special" work includes visits made by request of physicians, mothers, caretakers and others to see babies outside of our regular line of work.

In bringing this part of my report to a close, I wish to call your attention to the good and faithful work of my associates, the nurses of the Department, by whose systematic and efficient service we have been able to accomplish so much, that if no other good than that set forth above had been done by our branch of the Department, it has been well worth while, and the appropriation in money spent in this work has brought good returns.

PART II. Tuberculosis.

During 1915 the work for the prevention of tuberculosis has been operated along the same lines as were followed in 1914. The nurses made a systematic effort to give instruction and to distribute literature bearing on tuberculosis wherever it seemed to be needed. Ice tickets, which were furnished us by the Ice Mission, were given to a number of indigent patients.

Much time and labor were given by the nurses to the dispensary work which made a good record at the colored dispensary, but at the white dispensary there was a regrettable decrease in the number of patients admitted, and also in attendance. The cause of this decrease may partly be attributed to the discontinuance, by the Board of Health, of the supply of milk tickets which had formerly been given, to needy and worthy dispensary patients. This ruling went into effect in April, and it is noted that from the time they were discontinued, there was a decided falling off in the attendance at the white dispensary.

The division of our force which has been working against the spread of tuberculosis, has been grappling with an ever increasing amount of work, without a proportionate increase in the number of nurses, which has resulted in each nurse having to supervise and instruct more cases of this kind than she could handle satisfactorily.

The following table will give in condensed form the work accomplished by the Department nurses during the year, in regard to both the dispensary work and the supervision of and instruction to other tuberculosis cases not attending the dispensaries.

Number of visits to dispensary patients, white..........	136	
Number of visits to dispensary patients, colored.........	329	
Number of visits made to dispensary patients which were not recorded at dispensaries	440	
Total number of visits to dispensary patients......		905
Number of visits to non-dispensary patients		1,296
Total number of visits to tuberculosis cases......		2,201
Number of suspected tuberculosis cases located by nurses..		55
Number of patients to whom supplies were carried by nurses		164
Number of patients sent to Pine Camp................		57
Number of dispensary service hours given by nurses....	832¾	
Number of hours visiting tuberculosis cases in their homes	826½	
Total number of hours given by nurses to the work for prevention of tuberculosis..............		1,659¼

For further information, I refer you to the reports of chiefs of clinics of the Health Department Tuberculosis Dispensaries.

Respectfully submitted,
MARY JULIA MOORE, R. N.,
Chief Nurse.

REPORT OF INSPECTOR OF MILK AND FOOD SUPPLIES.

Dr. E. C. Levy,
Chief Health Officer, Richmond, Va.

Sir:

I have the honor to submit herewith my report as Inspector of Milk and Food Supplies for the year ending December 31, 1915.

Visits for the year 1915 13,212

	No. Places Inspected.	Visits
Grocery stores	912	5,820
Bakeries	22	318
Dairies	2	448
Markets	3	412
Depots	6	58
Cold storage plants	3	52
Ice cream plants	43	422
Commission houses	46	1,710
Fish auctions	4	580
Tea and coffee stores	13	52
Confectioneries	248	1,250
Abattoirs	8	64
Hotels	8	16
Cook shops	48	146
Restaurants	43	140
Drug stores (soft drinks)	34	119
Fish houses	31	595
Butcher shops	9	400
Groceries (wholesale)	15	98
Pie plants	1	32
Pickle factories	3	15
Candy factories	5	36
Cake and cracker factories	2	28
Ice plants	11	60
Private delivery of milk	8	250
Express depots	2	46
Twenty-five Cent stores	1	5
Five and Ten Cent stores	2	40
	1,533	13,212

FOOD PERMITS.

Permits granted	249
Permits revoked	4
Permits suspended	5
Permits restored	6
Amount to Treasurer on account of permits	698 00

Cases to court	14
Cases dismissed	1
Fines imposed	$140 00

MILK AND CREAM TO CHURN AND CONDEMNED.

Gallons of milk to churn	3,526
Gallons of milk condemned	4,734
Gallons of cream condemned	105
Cans condemned	12
Samples to Chemist	2,282
Samples to Bacteriologist	1,815

FOOD PRODUCTS CONDEMNED.

	lbs.	Value.
Poultry	510	$ 86 69
Fruits	6,820	181 90
Game	1,189½	241 85
Meats	2,834	328 48
Fish	31,852	1,810 60
Vegetables	42,400	1,021 70
Melons	20,330	849 00
Groceries	17,033	1,246 05
Candy	2,100	952 50
Butter	20	4 00
Hides	50	4 00
	125,138½	
Oysters	79 gals.	$ 68 00
Pickles	50 gals.	7 50
Eggs	753 doz.	134 21
		$ 6,936 48

One car can goods traced to Richmond by U. S. Government Inspectors ....20,000 lbs.

SUMMARY

1906 *to* 1915, *Inclusive.*

YEAR	Inspections	Food Condemned, Lbs.	Value of Food Condemned	Samples of Milk Taken	Food Permits	To Treasurer of Richmond
1906	8,882	336.095	$19,480.85	1,282	128	$ 256 00
1907	7 082	150,075	6 005.75	1,388	201	402.00
1908	9,213	311,581	7.551.67	1.473	234	468.00
1909	9,212	110,877	3,590 47	1,531	222	444 00
1910	7,706	90 409	3 284.40	1,614	212	424 00
1911	8,608	123,782	3,564.33	2,029	387	774 00
1912	10.440	251,207	5,869.38	1,674	267	534.00
1913	7,479	163.206	4 380 87	2,592	221	442.00
1914	12,619	179 028	5 341 49	3,403	268	536.00
1915	13 212	126,020	6,936.48	2,282	349	698.00
Total	94,452	1,842,280	$66 005.69	19,268	2.489	$4,978.00
Average No. 10 Years	9,445	184 228	6,600.56	1,926	248	$497.80

There is a marked improvement in all lines under food inspection, owing to the shippers being careful in their methods of handling and packing, as is shown in the amount of poultry and game condemned. Large amounts of vegetables and fish were infected, due to weather conditions, supply and demand. Losses heretofore sustained by shippers in careless methods is the cause for the improved condition. No cold storage poultry or game was sold or offered for sale.

The ordinance of August 13, 1910, requiring the protection of food products by screening is generally complied with. The places necessary for inspection in the annexed section are so scattered and a number of them so inaccessible to the car lines that they will not admit of the close inspection that is required of the more congested district.

There was erected on West Broad Street a market known as the "Jefferson Market." This market is so constructed as to meet the requirements of the law governing the protection of food products, and is a place where the consumer can obtain food supplies handled under the most improved sanitary conditions.

The Department is to be congratulated in being able to retain the services of the efficient and proficient Dairy Inspector, Mr. Strauch, and his assistant, Mr. Cantrell. The Assistant Food Inspector, Mr. Hare, is proficient in his respective duties

Respectfully submitted,

E. M. NOBLE,
Food Inspector.

REPORT OF DAIRY INSPECTOR.

Dr. E. C. Levy,
Chief Health Officer, Richmond, Va.

Sir:

I have the honor to present to you my report as Dairy Inspector for the year ending December 31, 1915.

Number of visits to dairy farms	1,705
Number of dairies visited and scored	160
Number of scores made	1,387

CLASS	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
30 to 40	0	1	0	0	0	0	0	0	0	0	0	0
40 to 50	0	0	0	0	0	0	0	0	0	0	0	0
50 to 60	8	1	2	5	1	1	0	2	3	0	4	0
60 to 70	38	46	49	37	40	40	34	30	36	32	28	53
70 to 80	52	44	76	61	54	67	65	71	64	54	64	58
80 to 90	7	9	14	13	10	13	10	14	16	10	11	9
90 to 100	1	2	3	3	3	3	3	2	2	3	2	3
Total number of scores made during month	106	103	144	119	108	124	112	119	121	99	109	123
Number of dairies scored which continued to sell milk and cream during month	105	102	120	119	108	124	112	119	121	99	108	123
Average score	70.6	71	71.7	71.8	72.3	72.7	72.9	73.3	72.8	73	72.8	71.4

Permits refused		12
Permits suspended		4
Permits suspended and restored		4
Permits revoked		5
Permits revoked and restored		5
Average score of three places whose permits were revoked		48.2
Average score of three places whose permits were revoked and restored		67.9
Diseased cows found and use of milk from same ordered distinued (14 with cowpox, 1 giving stringy milk, 5 injured udders, 8 inflamed bags, 5 with garget)		33
Gallons of milk condemned		5,067
Gallons of milk ordered to the churn		3,863
High temperature	1,423	
Special causes	2,440	
Samples of milk taken for bacteriological examination		1,731
New barns built during year		13
New milk houses built during year		13
Sets of blue prints for barn construction furnished during year		53
New barns under construction		10
New milk houses under construction		10
Number of new shippers to the Richmond market during the past year		16
Number of shippers that have discontinued shipping to Richmond during the past year		13

Owing to the adoption by the Richmond Health Department of a new score card on January 1, 1916, there has been a readjustment of the scores of the dairies supplying milk and cream to the city of Richmond. The score card adopted, and at present in use, is the official one recommended by the United States Department of Agriculture.

The procuring of enough milk within a short distance of Richmond to supply the city is becoming more difficult each year. Fortunately the cream supply of the city of Richmond is produced under the same rigid requirements as the milk supply, which made it possible during this fall, when the local milk supply was not sufficient to meet the demands, to procure a large quantity of milk from the cream shippers. As the dairymen engaged in the production of cream are located a considerable distance from the city, it consumes a great deal of time inspecting these places, in some cases taking more than a day to inspect one dairy farm. A number of new barns are now under construction by men who contemplate selling their product on the Richmond market. The majority of these are located a great distance from Richmond. It will be impossible, with the present force of inspectors, to keep the dairy farms up to the high standard in which they have been kept in the past unless provision is made for an additional inspector.

There has never been a time when the outlook for profitable dairying was more favorable than it is at present for the young man who is not afraid to work and who loves cows. The dairy cow is the only animal that can stay on high-priced land and make a profit. As a very large percentage of the milk supplied to the city of Richmond is produced within a very short distance of the city, our dairy farmers are necesssarily dairying on high-priced land. It is therefore very important that dairying be made a real business, and that the work be carried on with some system. Every dairyman should know what each cow in his herd is capable of doing, not only in order that he will be able to know what each cow is doing, but also from which cows calves should be raised. It is surprising how few of the dairymen who produce milk or cream for the Richmond market take the trouble to weigh or test the milk from their cows. During the year 1912, a Cow-Testing Association was organized in the vicinity of Richmond, consisting of 13 members and 621 cows, but, owing to lack of interest on the part of some of the members, this Association, organized in the month of April, was discontinued in August. I cannot too strongly impress upon dairymen the great value of knowing what each cow in the herd is capable of doing, and the only way to find this out is by weighing and testing the milk of each cow, either doing it yourself or having it done by some one who is engaged to do this work as a tester in a Cow-Testing Association.

Every dairyman whose business is dairying should know how much each cow must return in milk for every dollar's worth of feed eaten to be profitable; then, by knowing what each cow is capable of doing, the profitable cows are easily located in the herd. As some dairymen are able to carry on their business more economically than others ,they can dairy with profit with smaller producing cows than their neghbor. Some dairymen can make money if their cows return $1.50 for every dollar's worth of feed eaten, while in other cases it is necessary for the cow to return $1.80 for every dollar's worth of feed eaten. It has been demonstrated time and again that no man can tell the profitableness of his cows by their appearance. In building up the future herd it is necessary that we know what our cows are capable of doing. We are then better able to select and save calves from our large producing cows. When we do this the more profitable will be the business. There is no better way of getting the facts relative to the cost of producing milk on our farm than through the Cow-Testing Association. A great many dairymen say they can do the work just as well themselves, but they must always bear in mind that it is well to have our business looked over from an entirely different angle than the owner himself views it. One of the greatest helps the tester of an Association is able to give dairymen is the selection of an economical dairy ration. There is only one chance a dairyman takes in joining a Cow-Testing Association, this being if the man hired to do the testing is not capable.

Foot and mouth disease, one of the most costly of animal scourges, was discovered in the largest herd supplying milk to the city of Richmond by a private veterinarian, who notified the Richmond Health Department on Saturday, February 27th, at 2 P. M. The milk from this dairy farm was immediately excluded from the city by the Dairy Inspector, and the State and Federal authorities were informed of the outbreak fifteen minutes after the information was in possession of the Richmond Health Department. This herd was immediately quarantined by the Federal authorities, and, owing to their efforts and the co-operation of others, the disease was confined to the farm on which the outbreak was discovered. I cannot speak too highly of the work of the veterinarians from the Bureau of Animal Industry in connection with this outbreak. A thorough examination was made by them of all cows, sheep and hogs on farms within a radius of five miles of the infected farm, and also of all cows located within a radius of fifteen miles of Richmond whose product was sold on the Richmond market in the form of milk or cream. Due to their efforts in establishing a perfect quarantine, and later slaughtering the infected herd, the disease was confined to the original source of infection.

It is very difficult to convince the average owner of cattle that foot and mouth disease is more to be dreaded than either tuberculosis or contagious abortion, for it far exceeds either in the havoc which it works and the ease with which it is spread. A great many have felt that the Government has been wrong in slaughtering cattle and hogs affected with foot and mouth disease, but if those who think this way will only take the trouble to look up the experience of European countries where this disease, owing to the large number of herds infected, is handled by the isolation or quarantine method, they will, no doubt, agree with the officials of this country in the methods adopted by them for the control of the disease. The control of this disease by quarantine is a very difficult matter, as it is almost impossible to keep perfect quarantine of a farm except at great expense. Perhaps the United States may at some future outbreak be unable to control the disease and will have to accept the isolation policy, owing to the great cost of slaughtering large numbers of cattle, but with the few outbreaks we have had the best policy seems to be to bury the contagion and not allow the personal interest of a few to interfere with the eradication of this disease.

Not before dairy and stockmen are made to realize the loss sustained by having tuberculous cows in their herds can we expect them to test their cows and get rid of all re-acting animals. This disease, though preventable in cattle, is found in most every locality in which cattle are raised. The problem of cleaning up a herd and maintaining a healthy herd appears to be a very small job. All that has to be done is to test the cows, remove the diseased animals, disinfect the premises, prevent contact with other diseased animals, and add only healthy cattle to the herd, but to do this is a much larger job than it appears to be, and it is only by eternal vigilance that we can prevent the disease from getting back into our herds after it has once been eliminated.

If in testing a dairy herd the test shows only a few diseased animals, they should be removed at once, the premises disinfected and the herd retested in six months. If the majority of the herd is diseased, it is necessary to treat them all as diseased and build up a new herd from the offspring. This is possible by removing the calves at birth, feeding them pasteurized milk and testing them every six months. It requires time and great perseverance to prevent the disease being transmitted to the new herd. We must remember that the tuberculin test has its limitations. We should also try to learn more about the disease, how it spreads from animal to animal and what forces are necessary to destroy the germ. Cleanliness about the farm is very important, as is also the disinfecting of yards and barns. Cattle cannot have tuberculosis unless exposed to the tubercular germ. Neither can they have foot and mouth disease unless they come in contact with the bacteria which causes this disease. So one of the factors in keeping live stock healthy is to destroy the bacteria by the use of disinfectants, plenty of sunlight being one of the best.

The cry for clean milk increases each year, but the consumers, in general, do not appreciate the value of good clean milk and seem unwilling to pay for this milk what it is really worth. One of the big factors in clean milk production very seldom taken into consideration is the man who does the work. His health and habits must be of the right kind. Milk from clean, healthy cows milked by clean, healthy men into clean utensils; the use of small top milking pails; immediate cooling of the milk in a separate building used for no other purpose are the essential factors in clean milk production.

One of the most difficult matters in connection with the use of the small top milking pails is to get dairymen to try them. They will give you all kinds of arguments against the use of this style of pail, one argument being that the use of the pail with the small opening makes it inconvenient and some times difficult, especially with large-udder cows, to get all the milk into the pail. Most milkers, however, have found, after using small top pails a few days, that it was as easy to milk into the small top pail as into the common open pail.

As the years go by, dairymen who should be trying to reduce the cost of producing milk by obtaining better cows through better breeding will never reach this point unless every effort is made by them to purchase good bulls. The large milking cow is not capable of transmitting that quality to her daughter. It is only through the sire that we will obtain the improvement we are seeking. It is not necessary to have pure-bred cows for large production. The high-producing grade cow under normal, not forced, conditions will come pretty near producing as much milk in a year as the pure-bred cow. In most dairy herds we find three kinds of cows:

1. The money making cow.
2. The cow that just pays for her feed.
3. The cow that does not pay for her feed.

If a dairyman does not make some effort to find out the kind of cows he has in his herd, he can never expect to make very much money from dairying. It is no very big job to daily weigh the milk from each cow in the herd and in that way find out if she is paying us for the feed and good care we are giving her. To make money from a low-producing herd is almost impossible, but most any dairyman can do well with a herd of high average production. I cannot too strongly impress upon all who are in the business of producing milk for profit the importance of first going to work to cull out the low-producing cows and then to grade up the herd, and when you start out to purchase a bull don't do as a great many—make price your first consideration—but look up the bull's pedigree, or the records of his ancestors. Price is of little importance, and you cannot measure his value by price, but you can by his pedigree and the records of his ancestors. If a dairyman has a herd of 30 cows, he breeds these cows to a good pure-bred sire and is able to increase his milk-production 100 gallons per cow per year, say 15 heifers are produced, he would have increased the production of his herd, allowing 20 cents a gallon for milk, $20.00 per cow, or $300.00 for the 15 cows.

One of the big questions of today in the dairy business is to find the cost of producing a quart of milk, and, after we are able to determine the lowest price at which a quart of milk can be produced, to teach the dairymen how it can be done. One of the great difficulties in considering this question is the impossibility of obtaining any correct information regarding the cost of the various items that contribute toward the cost of producing milk other than the cost of feed. This Department will try this year, with the co-operation of the dairymen, to determine, as near as possible, how much it costs, on the average, to produce a quart of milk in the vicinity of Richmond.

The question of pasteurization is a very large one, and only if proper pasteurization of milk is brought about will it afford additional protection to the consumer; but we will still have the big economic problem of bovine tuberculosis and the annual crop of new cases of this disease in calves left untouched.

The policy of the Milk Inspection Division is practically the same as in the past, depending mainly upon its educational work for results, and doing everything practical under present conditions, with the co-operation of the producer and the milk dealer in the city, to give the citizens of Richmond a good, clean, wholesome milk supply.

Respectfully submitted.

T. J. STRAUCH,
Dairy Inspector.

REPORT OF CITY CHEMIST.

Dr. E. C. Levy,
Chief Health Officer, Richmond, Va.

Sir:

During the year 1915 I have examined for the Health Department the following samples:

Butter	2
Cream	2
Corn beef	1
Milk	2,378
Well water	4
Total	2,387

Table Showing the Number of Milk Samples Examined Each Month During the Year.

	City's Samples	At Citizen's Request	Total	Per Cent. Below Standard
January	316	3	319	19.30
February	199	1	200	18.09
March	199	1	200	16.58
April	180	0	180	34.44
May	187	7	194	33 87
June	154	0	154	21.42
July	218	23	241	44.50
August	145	1	146	29.65
September	211	2	213	27 01
October	163	0	163	20.86
November	182	0	182	21.42
December	165	21	186	12.12
Total	2 319	59	2 378	
Average per cent. below standard for year				24.94

JAS. M. WHITFIELD,
City Chemist.

REPORT OF PLUMBING INSPECTOR.

Dr. E. C. Levy,
Chief Health Officer, Richmond, Virginia.

Sir:

I have the honor to present to you my annual report as Inspector of Plumbing for the year ending December 31, 1915.

The past year has been a fairly prosperous one in building operations. During the year 566 new buildings were completed, in which plumbing inspections and tests were made, against 564 during the year 1914. This amount of work, however, consumed a great deal more time in making inspections than the same number of buildings did the previous year, owing to the fact that a large number of these houses were situated in widely separated districts in our annexed territory, requiring much more time to reach them and give the work the necessary attention. In fact, during our busy season it would have been utterly impossible to meet the demands for inspections if it had not been for the assistance rendered by the plumbers on the sanitary force.

Our city has greatly expanded, in the last few years, by taking in a large amount of territory. The drainage systems in many of the sections are entirely insufficient to meet the demands of a growing population, and some relief should be given by the installation of better sewer facilities. The increase in the number of new buildings in this territory demands this. The property owners are clamoring for these improvements. Many of these sewers are at present overcharged to such an extent that I have already been instructed by the Engineer's Department not to allow rain water leaders to be connected to house drains in order to prevent damage by overflow of back water on premises. This has been the cause of considerable complaint to this department on the part of property owners not having sewers of sufficient size to make these connections. I trust, therefore, that proper sewer systems may be installed in these localities in the near future, thus relieving these insanitary conditions. There is no more important work in public improvements than a proper and sufficient drainage system for the protection of public health.

During the past year 1,815 inspections were made of new drains and additions and alterations in plumbing in old houses. The work done under this head includes, in part, the abolishing of dry closets where public sewers were installed and sewer connections ordered by this Department, together with the other plumbing improvements made in the sanitary arrangements in old buildings.

The general sanitary condition of our city is steadily improving. This can be seen in every direction, and if in the future we can get public sewer extensions made in our outlying districts, as we have in the past, we will soon be able to rid these localities of the dry closet nuisance.

From present indications this will be a very prosperous year in building operations. Already there is a great amount of residential work under construction for this season of the year, including the preparation of plans for several large apartment houses, which will be commenced at an early date.

I must again call your attention to the great importance, for the convenience of the public, of the erection of public comfort stations in our city, and I trust our City Council may give this matter due consideration in the near future.

Mr. Thos. W. Mitchell, since being elected Assistant Plumbing Inspector, has been most efficient in discharge of his duties, and by his untiring efforts I have been better able to cope with the many complications that are continaully arising in plumbing construction work and in making inspections.

During the past year 17 cases were reported to police court, and $110.00 in fines imposed for violations of plumbing ordinances.

My tabular report follows:

MONTH	Inspections Made	Plumbers' Permits Issued	Inspections Made in New Buildings	Additions and Alterations Inspected	Complaints Investigated	Notices Served on Owners and Agents	Police Court Cases Tried	New Houses Completed
January	163	175	21	110	32	32	4	21
February	188	229	36	125	27	27	2	36
March	271	289	70	181	20	20	3	61
April	314	272	103	201	10	10	1	43
May	232	236	92	120	20	14	1	54
June	269	156	119	125	25	20	....	41
July	248	178	113	105	30	20	....	51
August	258	171	76	159	23	18	....	61
September	245	180	74	147	24	24	2	89
October	225	171	71	119	35	23	2	35
November	255	189	40	185	30	27	1	27
December	339	182	81	238	20	20	1	47
Total	3,007	2 428	896	1,815	296	255	17	566

Fines imposed, $110 00,

Respectfully submitted,

THOS. M. LANDERS,
Inspector of Plumbing.

REPORT OF THE PLUMBERS' EXAMINING BOARD.

Dr. E. C. Levy,
Chief Health Officer, Richmond, Virginia.
Sir:

I have the honor to submit herewith my report as Secretary of the Plumbers' Examining Board for the year ending December 31, 1915.

Meetings held during the year	12
Journeymen plumbers examined	17
Number examined and found unqualified	6
Number examined and licensed	11
Number of licenses renewed	100

Respectfully submitted,
THOS. M. LANDERS,
Secretary of the Plumbers' Examining Board.

FUMIGATOR'S REPORT.

Dr. E. C. Levy,
Chief Health Officer, Richmond, Virginia.

Sir:

I have the honor to submit to you my report for the year ending December 31, 1915.

MONTH	SCARLET FEVER		TYPHOID FEVER		DIPHTHERIA		TUBERCULOSIS		OTHER CAUSES		TOTAL	
	Houses	Rooms	Houses	Rooms	Houses	Rooms	Houses	Rooms	Houses	Rooms	Houses	Rooms
January	16	52	2	4	28	88	41	162	5	16	92	322
February	21	60	1	2	17	40	49	218	16	94	104	414
March	29	94	0	0	7	24	85	410	8	28	129	556
April	38	134	0	0	8	26	72	394	17	60	135	614
May	37	130	0	0	7	24	63	314	14	48	121	516
June	7	38	0	0	1	2	63	308	9	52	80	400
July	16	40	3	22	4	10	68	366	7	16	98	454
August	2	10	1	4	3	14	74	404	34	470	114	902
September	6	26	2	4	11	26	74	284	22	166	115	506
October	8	20	4	8	60	138	59	246	12	46	143	458
November	18	52	2	4	93	238	52	164	8	18	173	476
December	29	66	1	2	72	194	47	164	6	26	155	452
TOTAL	227	722	16	50	311	824	747	3,434	158	1,040	1,459	6,070

Respectfully submitted,

J. F. WALLER,
Fumigator.

REPORT OF WHITE TUBERCULOSIS DISPENSARY.

Dr. E. C. Levy,
Chief Health Officer, Richmond, Virginia.

Sir:

I have the honor to submit the following report of the work done at the Franklin Street Dispensary for Tuberculosis, conducted under your Department, for the year 1915.

A survey of the work from the attached annual report shows several distinct facts, which are as follows:

A diminution in the enrollment of the old and new patients, but chiefly in the old, as the figures show sixty new and forty old.

A decrease in the number of visits to the dispensary.

A greater decrease in visits made to patients by the nurses.

This can be explained, in part, by the fact that the discontinuance of milk tickets in April removed an incentive to some, and the too infrequent visits by the nurse for lack of time accounts for the decrease in visits to the dispensary.

Missionary work is necessary to keep up the interest of these patients, who must strive a long time to get appreciable results, and this can only be done by the visiting nurses. It is for this reason that I again recommend that the nurse attending to the tuberculosis work be unhampered by other work, especially baby work, as at some periods of the year sick babies are numerous, and naturally most nurses are drawn more strongly to the sick babies. The tubercular nurse recommended should, by preference, be an ex-tubercular herself and acquainted with social work.

Securing of quarters in a more travelled location where suitable sign would advertise and attract some who would otherwise be missed would be beneficial.

The dispensary has become more a place for diagnosis by those who have their own physician than formerly, and it continues to serve as a feeder to Pine Camp and the City Home Hospital.

Dr. G. A. Ezekiel and the nurses are thanked for their conscientious work at the dispensary.

Respectfully submitted,
GILES B. COOK, M. D.,
Chief of Clinic.

REPORT OF FRANKLIN ST. (WHITE) TUBERCULOSIS DISPENSARY FOR THE YEAR ENDING DECEMBER 31, 1915.

MONTH	SEX		AGE			STAGE OF TREATM'NT			DIAGNOSIS			SPUTUM REPORT			WEIGHT			NO. OF VISITS		CONDITION					NO LONGER UNDER TREATMENT					
																												Referred		
1915	Male	Female	Under 20 years	20-40 years	Over 40 years	New patient	Old patient	Discharged	Tubercular	Non-tubercular	Undetermined	Positive	Negative	Not examined	Increased	Stationary	Diminished	To dispensary	By nurse	Disease arrested	Improved	Unimproved	Progressive	Died	No case	Left city	Lost sight of	To other dispensar's	To private physic'an	To sanitorium
January	9	17	5	14	7	4	22	....	23	2	1	3	22	1	6	14	6	45	20		6	20	....	....	....	....	....	....	....	....
February	13	14	3	17	7	7	20	....	25	2	....	1	17	9	8	10	9	55	10	1	7	18	1	....	....	....	....	....	1	1
March	8	14	3	13	6	5	17	....	18	1	3	2	16	4	5	6	11	42	14	....	5	14	3	....	....	....	....	....	....	1
April	13	14	5	14	8	8	19	....	22	4	1	3	18	6	6	13	8	55	29	....	6	19	2	....	....	....	....	2	....	1
May	9	7	2	9	5	2	14	....	13	3	....	3	9	4	5	7	4	22	15	1	7	6	2	....	....	....	....	....	....	....
June	9	11	3	10	7	8	12	....	12	5	3	3	11	7	1	13	6	28	7	....	3	14	3	....	....	3	....	....	....	1
July	5	6	1	5	5	4	7	....	10	....	1	....	9	2	....	7	4	19	11	....	....	11	....	....	....	....	....	....	....	2
August	10	7	3	6	8	7	10	....	12	3	2	2	7	8	6	10	1	24	8	....	7	9	1	....	....	....	....	1	....	2
September	7	7	3	4	7	4	10	....	12	2	....	1	12	1	3	9	2	20	13	....	4	9	1	....	....	....	....	1	....	....
October	10	5	1	8	6	7	8	....	14	....	1	2	4	9	2	11	2	20	3	....	2	11	2	....	....	....	....	....	....	....
November	6	6	3	5	4	3	9	....	7	3	2	1	8	3	6	4	2	17	3	1	6	4	1	....	....	....	....	....	....	....
December	3	5	2	2	4	1	7	....	7	1	....	1	6	1	3	3	2	10	4	1	1	4	2	....	....	....	....	....	....	1
Total	102	113	34	107	74	60	155	....	175	26	14	22	139	55	51	107	57	357	137	4	....	....	....	....	....	3	....	4	1	9

Investigation of those dropped for non attendance show six additional ——

REPORT OF COLORED TUBERCULOSIS DISPENSARY.

Dr. E. C. Levy,
Chief Health Officer, Richmond, Virginia.

Sir:

I have the honor to submit herewith my annual report of the work done at the Colored Tuberculosis Dispensary and by the Nurses of the Richmond Health Department for the year ending December 31, 1915.

There were 685 visits to the Dispensary by patients, and 329 visits were made by nurses to patients in their homes. Of the patients attending in 1914, 50 returned in 1915, and 88 new patients presented themselves for treatment, making a total of 138 patients for the year. The greatest number attending in any one month was 44 in April, and the smallest number was 20 in November.

The 138 patients who attended may be classified as follows:

Sex: 53 males, 85 females.
Age: 31 under 20 years; 83, 20 to 40 years, and 24 over 40 years of age.
Diagnosis: 50 tubercular; 9 non-tubercular; 79 undetermined.
Referred: To other dispensaries, 6; to City Hospital or sanitoria, 2.

Of the 50 tubercular patients, 25 attended fewer than four times, and hence are not classified below as to condition after treatment. Many of these came only once, as did also many of those whose diagnosis was undetermined.

REPORT OF THIRD STREET (COLORED) TUBERCULOSIS DISPENSARY FOR THE YEAR ENDING DECEMBER 31, 1915

MONTH	SEX		AGE			STAGE OF TREATMENT			DIAGNOSIS			SPUTUM REPORT			WEIGHT			NO. OF VISITS		CONDITION					NO LONGER UNDER TREATMENT					
																												Referred		
1915	Male	Female	Under 20 years	20—40 years	Over 40 years	New patient	Old patient	Discharged	Tubercular	Non-tubercular	Undetermined	Positive	Negative	Not examined	Increased	Stationary	Diminished	To dispensary	By nurse	Disease arrested	Improved	Unimproved	Progressive	Died	No case	Left city	Lost sight of	To other dispensar's	To private physic'n	To sanitorium
January	16	17	9	18	6	9	24	2	19	3	11	12	17	4	10	9	7	63	40	0	12	16	3	1	1	0	0	0	0	1
February	15	21	12	19	5	7	29	0	21	2	13	12	19	5	8	10	9	63	38	0	14	17	5	0	0	0	0	0	0	0
March	16	25	11	26	4	15	26	0	28	0	13	14	19	8	13	11	7	86	46	0	15	19	4	2	0	0	0	2	0	0
April	14	30	13	25	6	9	35	1	26	1	17	13	23	8	7	25	8	81	35	0	19	20	4	1	1	0	0	0	0	0
May	12	25	12	18	7	10	27	2	22	2	14	10	18	9	10	15	6	62	32	0	16	17	3	0	1	1	0	1	0	1
June	11	24	11	18	6	10	25	0	17	0	18	8	19	8	6	14	12	61	20	0	9	22	4	0	0	0	0	1	0	0
July	16	16	10	17	5	8	24	0	15	0	17	10	14	8	5	16	8	52	27	0	8	20	3	1	0	0	0	0	0	0
August	14	15	10	13	6	8	21	0	15	0	14	12	12	5	4	15	7	53	19	0	5	19	5	0	0	0	0	0	0	0
September	12	20	8	17	7	3	29	0	18	1	13	11	17	4	15	7	7	52	29	0	9	18	4	4	1	0	0	0	0	0
October	12	17	11	13	5	4	25	0	12	0	17	7	17	5	12	9	5	39	15	0	8	17	4	0	0	0	0	0	0	0
November	7	13	6	10	4	0	20	0	10	0	10	5	15	0	9	9	2	35	15	0	15	3	2	0	0	0	0	2	0	0
December	9	13	6	11	5	5	17	0	10	1	11	6	11	5	11	9	2	38	13	0	8	12	2	0	0	0	0	0	0	0
Total	....	....	....	....	....	88	....	....	....	....	....	....	....	....	....	....	....	685	329	....	....	....	....	9	4	1	0	6	0	2

The condition after treatment of the 25 tubercular patients who attended four or more times was as follows: improved, 8; unimproved, 11; progressive, 5; died, 1.

There is a strong tendency among patients attending this dispensary to discontinue visiting the dispensary upon making noticeable improvement. If the disease in these cases subsequently becomes arrested, we may be unable to record them as arrested cases, because the majority of them cease to be dispensary patients, and therefore pass from under our observation. We invariably drop from the roll at the end of the month all patients who have not attended the dispensary at least once during the month, bed patients and others too ill to attend being excepted. This greatly reduces the number of recorded visits appearing in the appended table as made by the nurses to patients in their homes, for while the nurses are expected to keep track of all tuberculous cases, whether attending the dispensary or not, only the visits made to patients actually attending the dispensary are recorded in this table. Eight patients who died attended the dispensary fewer than four times, and are therefore not included in the above classified list. Two of the eight, however, were not tubercular and died of valvular disease of the heart. It is our custom to give each patient a thorough physical examination of the chest at least once a month, the results being accurately recorded on individual charts at the dispensary, by comparison of which at the end of the year a fairly accurate estimate of the patient's lung condition can be made. Patients whom we believe to be tubercular, but whose sputum does not show the presence of the bacillus are required to submit, from time to time, additional specimens for examination.

We note that there was no decrease in the number of old patients (i. e., patients of previous years) who returned for treatment this year. There was a slight decrease in the number of new patients applying for treatment. The fact that there was no decrease in the old patients returning for treatment is particularly gratifying, since the custom of supplying regularly a number of milk tickets to certain classes of tubercular cases was discontinued this year by the Health Department. We do not believe that this change has at all decreased the attendance at this dispensary.

Taken as a whole, the patients of this dispensary—particularly those definitely known to be tuberculous—have attended faithfully. We believe that many of them have honestly endeavored to observe, on the street and at home, the instructions heard for the first time at the dispensary but repeated to them many times since by the nurses in their daily rounds and by the physicians at the dispensary. We indulge the hope that there shall soon be a large increase in the number of tubercular cases that shall be brought under these benign influences, for we feel that our city is daily reaping fatal results of the carelessness of a large number of its citizens who are ignorant of their condition and know nothing of the numerous ways they may avoid contaminating their families and friends. We insist that the educational feature of the dispensary for communicable diseases is one of its strongest reasons for existing, and unless it fulfills this function it fails in its most important mission. We hope, therefore, that if it be impossible to cure many cases that apply to the dispensary that we may serve in a broader field of usefulness by teaching *all* cases to observe the laws of health that contribute most to their comfort and the rules of conduct by which they may least be a menace to the community, and that we may assist in part, at least, in discharging the great obligation that rests upon the physicians of our city to *prevent* rather than to cure the "Great White Plague."

While the dispensary has had a successful year and a great deal of good has been accomplished, we feel that the number of untreated cases applying should be greatly increased, and we hope that some plan may soon be inaugurated to accomplish this purpose.

I wish to express my appreciation of the valuable service of my associate, Dr. R. S. Bosher, Jr., who has made the work possible and very agreeable. I should be remiss if I fail to record my approval of the courteous attention to the patients and the faithful services at the dispensary of the efficient nurses of the Health Department. I believe they have devoted what time they could to visiting the patients in their homes. The demand upon their time is large. The willingness of the Chief Health Officer to provide every facility at his disposal for the successful conduct of the dispensary work is greatly appreciated.

The appended table of summaries gives a detailed account of the dispensary work, month by month.

Respectfully submitted,
P. D. LIPSCOMB, M. D.,
Chief of Clinic.

REPORT OF DISTRICT PHYSICIAN, FIRST DISTRICT.

Dr. E. C. Levy,
Chief Health Officer, Richmond, Virginia.

Sir:

I have the honor to submit to you my report as District Physician of the first District for the year ending December 31, 1915.

Number of visits, white	472
Number of visits, colored	667
Total number of visits	1,139
Number of white patients	215
Number of colored patients	341
Total number of patients	556
Number of patients, male	153
Number of patients, female	403
Total number of patients	556
Number of deaths, white	0
Number of deaths, colored	1
Total number of deaths	1
Number of patients sent to the City Home	45
On hand December 31, 1915	2

Respectfully submitted,

J. G. TRANT, M. D.,
District Physician.

RTPORT OF DISTRICT PHYSICIAN, SECOND DISTRICT.

Dr. E. C. Levy,
Chief Health Officer, Richmond, Virginia.
Sir:

I have the honor to submit to you my report as District Physician of the second District for the year ending December 31, 1915. This report includes the work of my predecessor, Dr. J. H. Crouch, from January 1 to August 31, and my own since September 8, on which date I entered office.

Number of visits, white	1,010
Number of visits, colored	539
Total number of visits	1,549
Number of white patients	460
Number of colored patients	236
Total number of patients	696
Number of patients, male	236
Number of patients, female	460
Total number of patients	696
Number of deaths, white	5
Number of deaths, colored	3
Total number of deaths	8
Number of patients sent to the City Home	12
Number of patients sent to Virginia Hospital	46
On hand December 31, 1915	5

Respectfully submitted,

B. L. PHILLIPS,
District Physician.

REPORT OF DISTRICT PHYSICIAN, THIRD DISTRICT.

Dr. E. C. Levy,
Chief Health Officer, Richmond, Virginia.

Sir:

I have the honor to submit to you my report as District Physician of the third District for the year ending December 31, 1915.

Number of visits, white	794
Number of visits, colored	1,816
Total number of visits	2,610
Number of white patients	267
Number of colored patients	573
Total number of patients	840
Number of patients, male	263
Number of patients, female	577
Total number of patients	840
Number of deaths, white	2
Number of deaths, colored	8
Total number of deaths	10
Number of patients sent to the City Home	80
On hand December 31, 1915	12

Respectfully submitted,

J. F. CRANE,
District Physician.

REPORT OF THE CHIEF SANITARY OFFICER.

Dr. E. C. Levy,
Chief Health Officer, Richmond, Virginia.
Sir:

I have the honor to submit to you my report as Chief Sanitary Officer for the year ending December 31, 1915. This report incorporates the report of the seven sanitary officers, and the work of Mr. J. J. Murphy and Mr. T. M. Landers, Jr., specially appointed inspectors.

The budget for 1915 created positions for two additional sanitary officers. These places were filled, on February 8th, by Mr. W. A. Bowry and Mr. R. R. Wrenn. The death of Mr. E. A. Boaz, Assistant Plumbing Inspector, caused a vacancy in that department. Mr. Thos. W. Mitchell, who had been serving as sanitary officer since September 16, 1911, was elected by the Board of Health to fill this vacancy, and Mr. T. M. Landers, Jr., who had before served as a temporary inspector, was put on the regular force.

The action of the Board of Health in advancing one of the men in the office is very commendable and pleasing. The men in the office who are able to fill a place of higher honor and responsibility know full well that the Board of Health has always and will continue to advance those in the office whose past services merit such recognition. I sincerely regretted to lose the services of such a useful man, but, in this loss, I felt that it was the city's and his gain.

The failure of the City Council to grant the wishes of the Board of Health in regard to the needs asked for last year in a general increase in the number of sanitary officers was keenly felt in the sanitary department, and our work has suffered to some extent by increased work on the small number of inspectors. Prior to annexation, our city was better canvassed, owing largely to the city being relatively smaller. I trust that the Finance Committee can see a clear way of granting the Board of Health's wishes in this respect this year. I have felt, for some time, that our system of inspection is entirely too low, and for the advancement of sanitary regulations and enforcement our standards must be materially advanced. It is obvious, with such a small force as we now have, that we will be unable to do any more than we are at present undertaking. It is not my desire to travel in the same routine from year to year when I feel that there are many things of importance which need to be corrected to keep pace with other cities of this country.

Stable inspection, as heretofore, has received a very close watch. With exception of a very few cases, all of our stables in the old city have been up to requirements during the year. There are many minor things in connection with stable work which must receive constant supervision to keep them up to requirements. Especially is this true in the construction and maintenance of manure receptacles. Usually with small stables wooden boxes are used as receptacles, and the life of them is very short. The work of keeping them absolutely tight is very great and at times very difficult.

In connection with fly work, our Department has contributed valuable information in methods of lessening and control of the house-fly. However, there are many exceedingly valuable points to be worked out, which I hope will be done this summer. These points are methods which, as far as I know, no other health department has ever undertaken, as no record of results has ever been published.

Dry closets are, as usual, a very troublesome nuisance, and even under the most rigid inspection the boxes are frequently found leaking, and the condition of the houses otherwise becomes a menace to health. Notwithstanding the many objectionable features about the sanitary construction and control of dry closets, splendid work has been done by placing this entire branch of our work under the control of one officer, whose whole time is taken up with same, scarcely being able to do anything else. I may say here that I find that by concentration of responsibility in placing certain kinds of work in the hands of one or two inspectors the work is better looked after and far better results have been secured. I may say that I am unable to accurately tell how many dry closets there are at present in the city of Richmond, owing to the ownership of private sewers in a large portion of the annexed territory. There are very few maps of these sewers, and where new houses are being erected I am unable to determine if they can reach these private sewers. I can say, however, that there are approximately, including the old city and the new, about 3,500 dry closets in the city of Richmond. The Administrative Board has made provision, by extending sewers in these unsewered sections, to reach a considerable number of houses. At present I am unable to determine just how many.

In closing, it appears that we are about to be placed under the Administrative Board some time in the very near future. I sincerely trust, hoping to offend no one, that the Honorable Administrative Board will give you the authority to appoint and dismiss sanitary officers, and members of other branches of this Department, as you may see fit to do so. In making this statement I have no desire to strengthen my own position or to use the position for the advancement of my own personal wishes, but I believe that by so placing this responsibility in your hands we will be able to secure the services of more technically trained men. Sanitary inspection has now reached the point where an ordinary education is not all that is necessary for the men to have. If our standard of inspection is to be raised, there must, of necessity, be men of special training to fathom out some of these problems without burdening the Chief Health Officer.

My tabular report follows:

Summons served	376
Cases in court	493
Old closets ordered repaired	2,243

New closets put in	623
Dry closets inspected	6,000
Dry closets ordered cleaned and destroyed	339
Closet boxes ordered in and houses repaired	2,863
Old stench traps repaired	802
New stench traps ordered in	173
Old hydrants ordered repaired	666
New dry closets ordered	123
Sewer connections ordered	428
Sewers ordered repaired and cleaned	947
Water connections ordered	198
Rain conductors, gutters and roofs ordered repaired	665
Kitchen sinks ordered repaired	586
Visits for Plumbing Inspector	386
Water pipes ordered repaired	611
Yards inspected	12,882
Yards ordered cleaned	3,960
Vacant lots inspected and ordered cleaned	357
Areas inspected—ordered cleaned and drained	58
Cellars ordered cleaned and drained	136
Outhouses inspected and ordered cleaned	100
Dead animals ordered to be removed	278
Alleys inspected	253
Alleys ordered cleaned	201
Old wells inspected—ordered cleaned and repaired	69
Old wells condemned and ordered filled	263
Manure piles ordered removed and barrels ordered	1,285
No cause for complaint	419
Contagious disease cards put up	587
Original houses visited	14,001
Premises revisited	20,911
Agents, Owners and Plumbers visited	9,790
Miscellaneous visits and orders	2,396
City water ordered on premises	1,382
Culture stations visited	435
Birth certificates investigated	144
Catch basins ordered cleaned	112
Stables inspected	5,784
Stables ordered repaired	907
Total number of visits	60,019

In addition to my work as Chief Sanitary Officer, the following detail work was also done by me during 1915:

Summons served	32
Cases in court	25
Old closets ordered repaired	50

Catch basins ordered cleaned	6
Stables inspected	56
Stables ordered repaired	15
Total number of visits	8,134

Respectfully submitted,

W. A. BOWRY,
Sanitary Officer.

Dr. E. C. Levy,
Chief Health Officer, Richmond, Virginia.
Sir:

I have the honor to submit to you my report as Sanitary Officer for ten months and fifteen days of 1915.

Summons served	69
Cases in court	77
Old closets ordered repaired	95
New closets put in	20
Dry closets inspected	3
Dry closets ordered cleaned and destroyed	3
Closet boxes ordered in and houses repaired	7
Old stench traps repaired	46
New stench traps ordered in	17
Old hydrants ordered repaired	20
New dry closets ordered	0
Sewer connections ordered	10
Sewers ordered repaired and cleaned	57
Water connections ordered	0
Rain conductors, gutters and roofs ordered repaired	45
Kitchen sinks ordered repaired	23
Visits for Plumbing Inspector	75
Water pipes ordered repaired	48
Yards inspected	334
Yards ordered cleaned	150
Vacant lots inspected and ordered cleaned	4
Areas inspected—ordered cleaned and drained	0
Cellars ordered cleaned and drained	2
Outhouses inspected and ordered cleaned	0
Dead animals ordered to be removed	2
Alleys inspected	6
Alleys ordered cleaned	3
Old wells inspected—ordered cleaned and repaired	0
Old wells condemned and ordered filled	2
Manure piles ordered removed and barrels ordered	369
No cause for complaint	31
Contagious disease cards put up	14
Original houses visited	472
Premises revisited	3,291
Agents, Owners and Plumbers visited	1,217
Miscellaneous visits and orders	387
City water ordered on premises	39
Culture stations visited	54
Birth certificates investigated	0
Catch basins ordered cleaned	4

Stables inspected	859
Stables ordered repaired	332
Total number of visits	6,520

Respectfully submitted,

T. M. LANDERS, JR.,
Sanitary Officer.

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